DEVOTED TO RESEARCH AND CLINICAL STUDY OF THE DISEASES AND PROCESSES OF THE AGED AND AGING

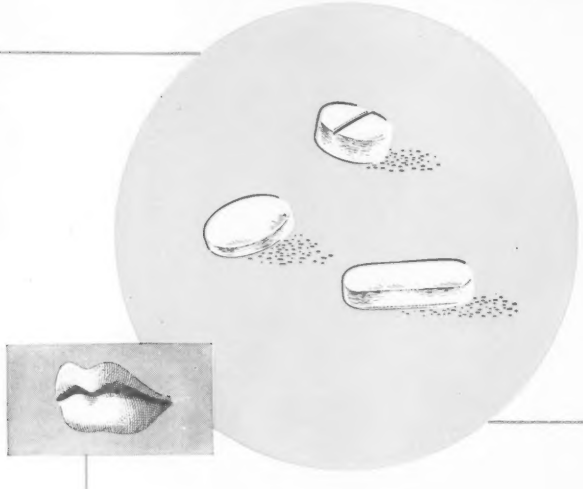
Geriatrics

Official Journal of the AMERICAN GERIATRICS SOCIETY

VOLUME 3 January-February 1948 NUMBER 1

A COMPLETE GROUP OF

the most economical oral forms



of steroid sex hormones

Patients not requiring close supervision—and those for whom treatment by injection is not practical— can be most economically treated with Metandren and Lutocylol Linguets*, and tablets of Ethinyl Estradiol-Ciba. These are the most potent substances of their kind available, effective in initial as well as maintenance therapy.

***LINGUETS**, designed for direct absorption by the oral mucosa, are exclusive with Ciba. They are nearly twice as effective, milligram for milligram, as tablets which are ingested.

METANDREN—*(methyltestosterone—most potent oral androgen). LINGUETS 5 and 10 mg. Tablets 10 and 25 mg.*

ETHINYL ESTRADIOL-CIBA—*Most potent oral estrogen. Tablets 0.02 and 0.05 mg.*

LUTOCYLOL—*(anhydrohydroxyprogesterone—most potent oral progestogen). LINGUETS 10 mg. Tablets 5 and 10 mg.*

For further information write Medical Service Division

Ciba PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY

2-1329M

METANDREN, LUTOCYLOL, LINGUETS • T. M. Reg. U. S. Pat. Off.

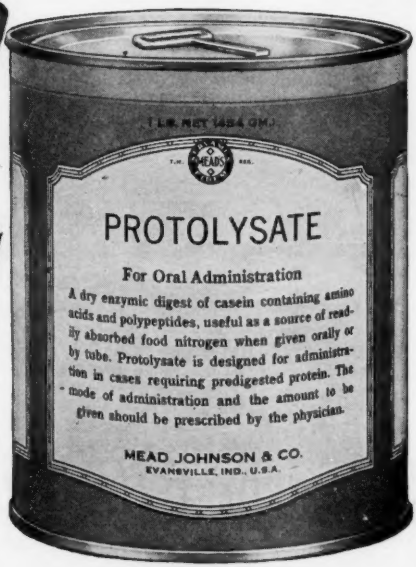
1000 cc. flasks
500 cc. flasks
125 cc. flasks
for hospitals

1 LITER (1000 CC.)
AMIGEN 5%
IN 5% DEXTROSE SOLUTION
A sterilized, aqueous, non-pyrogenic, 5 percent (weight/volume) solution of a pancreatic hydrolysate of casein containing amino acids and polypeptides with 5 percent dextrose. Hydrogen-ion concentration adjusted to pH 6.8.
WARNING: Do not use if the solution is cloudy or if sediment is present. The contents of this bottle must not be used for more than one infusion. For storage, keep the unopened bottle in a cool place.
Use before
Test No.
MEAD JOHNSON & CO.
EVANSVILLE, IND., U.S.A.

COUNCIL-ACCEPTED
AMIGEN
for parenteral administration of amino acids

The function of Amigen and Protolysate is to supply the amino acids essential for nutrition. Both can be given in place of protein when protein cannot be eaten or digested, or in addition to protein when the protein intake is insufficient. Administered in adequate amounts, they prevent wastage of protein, restore previous losses, or build up new body protein.

COUNCIL-ACCEPTED
PROTOLYSATE
for oral and tube feeding of amino acids


1 LB. NET (454 GM.)
PROTOLYSATE
For Oral Administration
A dry enzymic digest of casein containing amino acids and polypeptides, useful as a source of readily absorbed food nitrogen when given orally or by tube. Protolysate is designed for administration in cases requiring predigested protein. The mode of administration and the amount to be given should be prescribed by the physician.
MEAD JOHNSON & CO.
EVANSVILLE, IND., U.S.A.

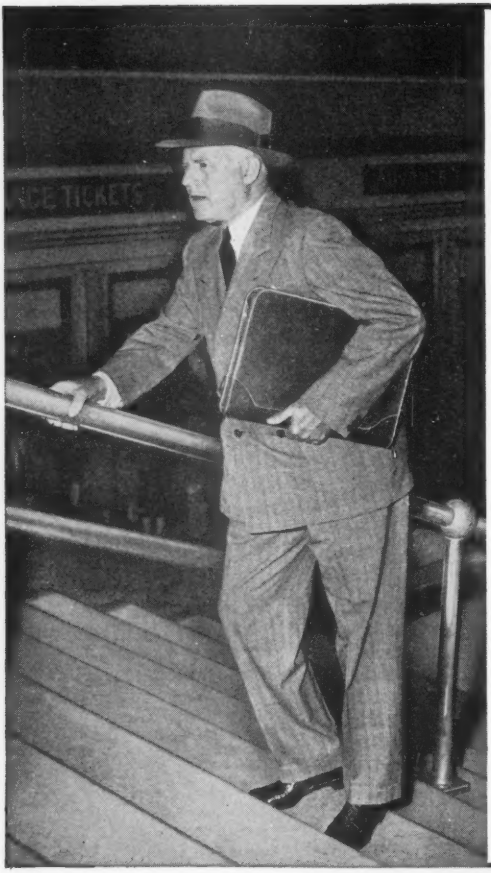
1 lb. cans at drug stores

Like Amigen, Protolysate is an enzymic digest of casein and consists of amino acids and polypeptides. Like Amigen, Protolysate supplies the nitrogen essential for maintenance, repair and growth.

Unlike Amigen, which may be employed both orally and parenterally, Protolysate is designed only for oral use.

MEAD JOHNSON & CO., EVANSVILLE 21, INDIANA

There is no shortage now of AMIGEN for parenteral use. There is no shortage now of PROTOLYSATE for oral use.



ANGINA PECTORIS

and other Manifestations of CORONARY INSUFFICIENCY

The following episodes may be prevented by appropriately regulated administration of a vasodilator having a *sustained* effect:

FOR THE PERSON

- ***who is compelled to stop and rest when climbing a flight of stairs.***
- ***who suffers "indigestion" and "gas" on exertion, or after a heavy meal.***
- ***who is stricken with precordial pain on unusual exertion or emotion, or when exposed to cold.***

The vasodilatation produced by Erythrol Tetranitrate Merck begins 15 to 20 minutes after administration, and lasts from 3 to 4 hours.

It is generally agreed that the acute attack of anginal pain is most readily relieved by the prompt removal of the provocative factor, and by the use of nitrites. For prophylactic purposes—to control anticipated paroxysms—the delayed but prolonged action *of erythrol tetranitrate is effective. Erythrol tetranitrate, because of its slower* and more prolonged *action, is also considered preferable for the purpose of preventing nocturnal attacks.*

ERYTHROL TETRANITRATE MERCK

(ERYTHRITYL TETRANITRATE)

Council *Accepted*

MERCK & CO., Inc. RAHWAY, NEW JERSEY

Manufacturing Chemists

MERCK MERCK

liver disorders

cirrhosis
fat infiltration
functional impairment
toxic hepatitis
infectious hepatitis

methischol

(pronounced meth' is kol)

A synergistic combination of METHIONINE, CHOLINE and INOSITOL in a LIVER-VITAMIN B COMPLEX BASE . . . lipotropic substances which favor the transport of fat from the liver to the fat depots of the body . . . for prophylaxis, retardation and specific therapy in reparable liver damage.

each tablespoonful or 3 capsules contain:

dl-Methionine ..... **333 mg.**
Choline ..... **250 mg.**
Inositol ..... **166 mg.**
together with the natural B complex from 12 grams of liver.

Supplied, in bottles of 100, 250, 500 and 1000 capsules and 16 oz. and gallon syrup.

advantages of **methischol**

1. three efficient lipotropic agents.
2. natural B complex from liver.
3. essential, readily utilized METHIONINE.
4. well tolerated, non-toxic, convenient.

Detailed literature and sample.

u. s. vitamin corporation
casimir funk labs., inc. (affiliate)
250 east 43rd street • new york 17, n. y.

THE THERAPEUTIC ROLE OF VITAMINS...

. . . is more fundamental than merely to prevent or cure the well-known syndromes of specific deficiency diseases. Restoring carbohydrate and amino acid metabolism to normal is also attributable to the role of vitamins.

Recovery from shock, acute infections, and surgery is accelerated by the administration of two Gelseals 'Theracebrin' (Pan-Vitamins, Therapeutic, Lilly) per day for a week or ten days. Thereafter, one Gelseal 'Theracebrin' daily is sufficient to maintain tissue levels of the essential vitamins.

Gelseals 'Theracebrin' are available in bottles of 30, 100, and 500.

GELSEALS THERACEBRIN

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INDIANAPOLIS 6, INDIANA, U.S.A.

Official Journal of the American Geriatrics Society

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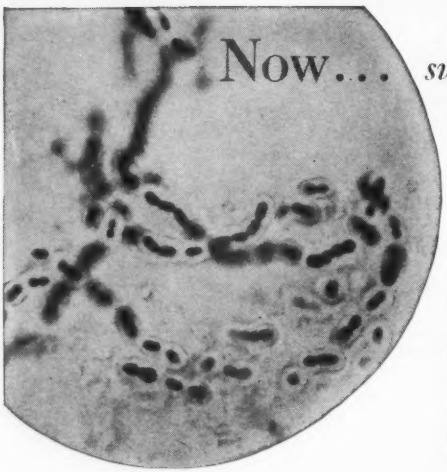


Photomicrograph of DIPLOCOCCUS PNEUMONIAE (magnified 1,350 times), after "typing" with homologous antiserum by Neufeld method. The swollen, unstained, sharply outlined capsules contain the type-specific polysaccharide, which is mixed with similar antigens from other types of pneumococci in the preparation of Solution of Pneumococcus Polysaccharides.

Now... *successful active type-specific immunization against pneumococcal pneumonia*

"The evidence . . . demonstrates clearly that immunization of man with the specific capsular polysaccharides of pneumococcus types I, II, V, and VII is effective in preventing the development of pneumonia due to these types in the immunized subjects."[1]

1. MacLeod, C. M.; Hodges, R. G.; Heidelberger, M., and Bernhard, W. G.: J. Exp. Med. *82*:445 (Dec. 1) 1945.

In the above mentioned investigation on 17,035 subjects with a preparation made by Squibb, pneumonia of the types represented in the vaccine was entirely eliminated in the immunized group (8,586), excepting for four cases which developed before specific immunity had been established. And in the non-immunized group of 8,449 controls, all of whom were closely associated with the immunized group, the incidence of these types of pneumonia was *greatly lowered* through the reduction of "carriers." Reactions were mild. The slight arm soreness reported by those injected lasted only 3 to 4 days.

Solution of
PNEUMOCOCCUS POLYSACCHARIDES
Type-specific

supplied in two combinations of types to which adults and children, respectively, are generally most susceptible:

COMBINATION A: Containing types 1, 2, 3, 5, 7 and 8. (Primarily for adults)

COMBINATION B: Containing types 1, 4, 6, 14, 18 and 19. (Primarily for children)

DOSAGE: A *single* subcutaneous injection of 1 cc. for adults, or children over 12 years of age; 0.5 cc. for children under that age. Immunity usually develops within 6 to 9 days and is effective for at least one year.

AVAILABLE: Each combination supplied in 1 cc. and 5 cc. rubber-stoppered vials.

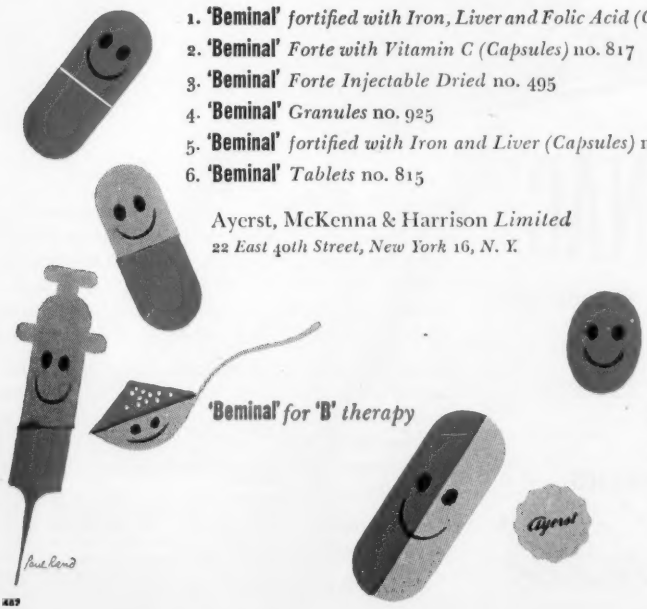
Professional leaflet, "Active Immunization Against Pneumococcal Pneumonia" is available upon request.

SQUIBB MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

6 Beminal®

Now there are 6

With the addition of 'Beminal' fortified with Iron, Liver and Folic Acid, No. 821, the **'Beminal'** family now presents six distinctive forms and potencies for the effective treatment of vitamin **'B'** deficiencies. **'Beminal'** fortified with Iron, Liver and Folic Acid is suggested for the treatment and prevention of iron-deficiency anemias and certain macrocytic anemias as well as adjunctive therapy in pernicious anemia. Starting with the newest addition here are the six members of the versatile **'Beminal'** family for **'B'** therapy:



1. **'Beminal'** *fortified with Iron, Liver and Folic Acid (Capsules)* no. **821**
2. **'Beminal'** *Forte with Vitamin C (Capsules)* no. 817
3. **'Beminal'** *Forte Injectable Dried* no. 495
4. **'Beminal'** *Granules* no. 925
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6. **'Beminal'** *Tablets* no. 815

Ayerst, McKenna & Harrison *Limited*
22 East 40th Street, New York 16, N. Y.

LEDINAC*

LIVER PROTEIN HYDROLYSATE

*REG. U. S. PAT. OFF.

AMINO ACIDS
MODIFIED PROTEIN
VITAMINS
MINERALS
CARBOHYDRATES

Lederle

Middle age can be such that those who experience it consider themselves fortunate. And by middle age, surely no one today would think except in terms of the fifth, sixth, seventh, *and* eighth decades of life! Old age, as it was known before the secrets of nutrition and the prevention of infections were unfolded, is as out of date as gaslight.

For patients who need prompt nutritional aid, LEDINAC Liver Protein Hydrolysate *Lederle* is a highly palatable form of amino acids derived from liver protein by a mild enzymic digestive process. It is easily soluble and favors hyperalimentation without making necessary the ingestion of a bulky food.

Prescribe LEDINAC three times a day with milk or fruit juices for your geriatric patients!

Containers of ½ lb. and 5 lbs.

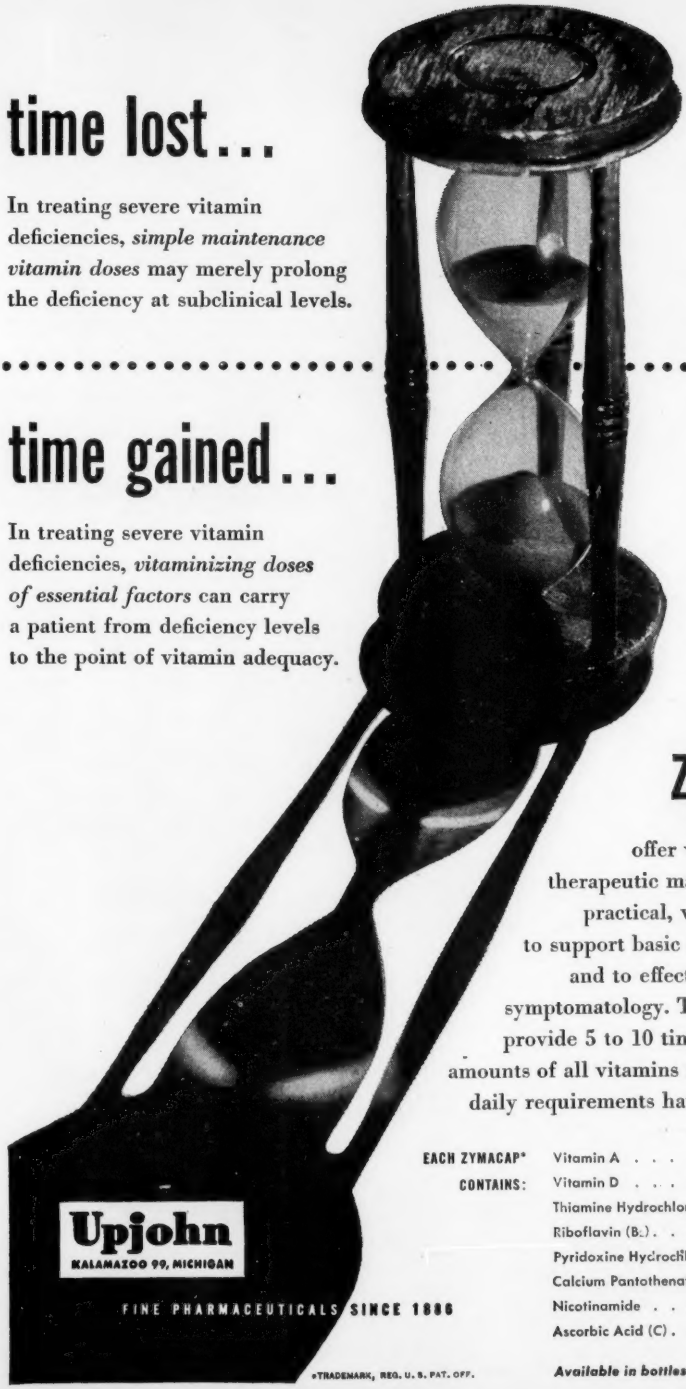
LEDERLE LABORATORIES DIVISION
AMERICAN CYANAMID COMPANY • 30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.

time lost...

In treating severe vitamin deficiencies, *simple maintenance vitamin doses* may merely prolong the deficiency at subclinical levels.

time gained...

In treating severe vitamin deficiencies, *vitaminizing doses of essential factors* can carry a patient from deficiency levels to the point of vitamin adequacy.



zymacaps

offer vitamin potencies of therapeutic magnitude for simple, practical, vitaminizing therapy to support basic enzymatic processes and to effect prompt reversal of symptomatology. Two Zymacaps a day provide 5 to 10 times the maintenance amounts of all vitamins for which minimum daily requirements have been established.

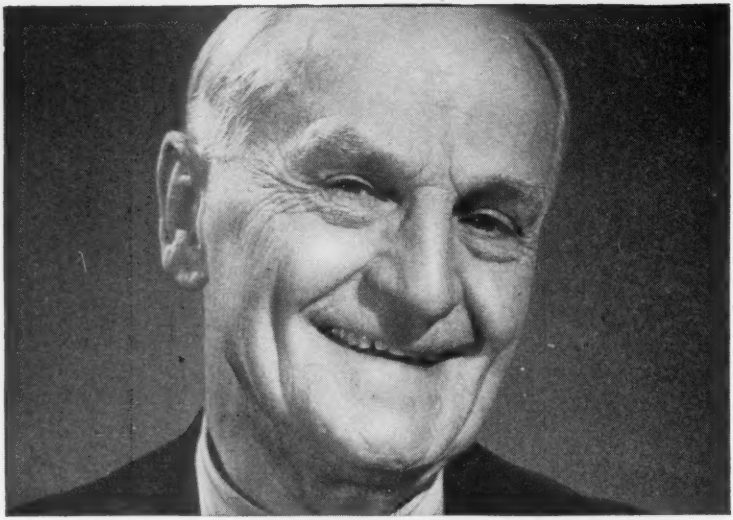
EACH ZYMACAP* CONTAINS:	
Vitamin A	12,500 U. S. P. units
Vitamin D	1,000 U. S. P. units
Thiamine Hydrochloride (B_1)	5 mg.
Riboflavin (B_2)	5 mg.
Pyridoxine Hydrochloride (B_6)	2 mg.
Calcium Pantothenate	10 mg.
Nicotinamide	30 mg.
Ascorbic Acid (C)	100 mg.

Available in bottles of 24, 100, and 250

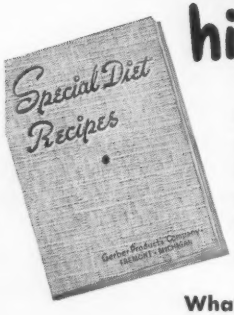
Upjohn
KALAMAZOO 99, MICHIGAN

FINE PHARMACEUTICALS SINCE 1886

*TRADEMARK, REG. U. S. PAT. OFF.



How Grandpa got back his after-dinner smile!



Here are 73 good reasons why grandpa forgot the foods he can no longer eat—and began enjoying the ones he can. All your older patients on bland diets will find colorful, appetite-tempting dishes in the Special Diet Recipes prepared by Gerber's nutritionists. Yours for the asking.

What a variety of flavorful meals can be based on purée-smooth, easily digested *Gerber's Strained Foods!* Tasty vegetables, soups, meat-combinations are sparingly seasoned with salt. They, plus fruits and desserts are low in crude fiber. Equally bland is the wide variety of Gerber's *Junior Foods.*

Free to you for your special diet patients:

1. Samples of Gerber's Cereal Food, Strained Oatmeal and Barley Cereal. Rich in *added iron, calcium, phosphorus* and *B-complex vitamins.* Low in crude fiber.
2. Special Diet Recipe books.
3. Professional reference cards.

Write to Gerber's, Dept. JGI-8, Fremont, Mich.

Gerber's

FREMONT, MICH.—OAKLAND, CAL.

3 CEREALS **18 STRAINED FOODS**
13 JUNIOR FOODS

Introducing a NEW COMBISUL

another step toward safer sulfonamide therapy

First to make available to the medical profession a combination of two different sulfonamides for the purpose of decreasing the danger of renal toxicity, Schering now introduces a new COMBISUL* containing the three most valuable sulfonamides for systemic therapy—sulfadiazine, sulfamerazine and sulfathiazole. The mixture of these three compounds extends further[1] the proved value of previous dual combinations:

COMBISUL

greatly increased urinary solubility
decreased likelihood of renal irritation
increased potentiation of therapeutic effects

COMBISUL is available in two forms: Tablets of 0.5 Gm. consisting of 0.166 Gm. each of sulfadiazine, sulfamerazine and sulfathiazole; and Liquid, a palatable suspension containing 0.166 Gm. of each of the same sulfonamides per teaspoonful for children and adults who cannot swallow tablets easily. Indications are the same as for the individual components of the mixture.

COMBISUL Tablets: 0.5 Gm. in bottles of 100 and 1000.
COMBISUL Liquid: 0.5 Gm. per cc. in bottles of 4 and 16 oz.

1. Lehr, D.: Proc. Soc. Exper. Biol. & Med. 64:393, 1947

*®

CORPORATION • BLOOMFIELD, NEW JERSEY
IN CANADA, SCHERING CORPORATION LIMITED, MONTREAL

COMBISUL

SCHERING

"We recommend a diet for the aged which the normal adult diet, **and that**

White

LABORATORIES, INC., Pharmaceutical Manufacturers, Newark 7, N. J.

approximates

vitamin B be increased" [1]

The increased carbohydrate intake of the elderly, as well as states of dehydration, poor economy of B complex factors, anorexia, depletion due to disease are listed by investigators as pointing the need for B supplementation in geriatrics.

The B factors most frequently found lacking in diets of the aged are supplied in White's Multi-Beta Liquid—an easy, convenient method of reinforcing such diets. In correcting B deficiencies, White's Multi-Beta Liquid helps promote appetite. The action of the B vitamins on intestinal motility is particularly important in the aged.

White's Multi-Beta Liquid provides all the clinically important B complex factors in a pleasant form—may be administered with fruit juice, milk or soft foods; imparts no odor or taste; pleasant to take directly. In bottles (with suitable droppers) of 10 cc., 25 cc. and 50 cc.

1. Meyer, J., Sorter, H., Necheles, H.: Nutrition in the Aged, Gastroenter. 5:403 (Nov.) 1945.

Multi-beta *Liquid*

a helping hand for the aging patient

When a Bit of *Candy* Means So Much

From a psychogenic point of view, anything that adds to the patient's sense of well-being contributes to more rapid return of a normal outlook. Candy can serve in this capacity. When not contraindicated by the clinical situation at hand, a piece or two of candy at the end of a meal leads to a feeling of satiety in a most pleasant form. Most persons like candy, and permission to enjoy this treat during the convalescent period especially gives encouraging assurance to the patient that the clinical progress being made is satisfactory.

That candies have a place in the dietary is evident from the many desirable foods with which most candies are made—eggs, butter, cream, milk and nuts. To the extent these foods are present, candies contribute valuable protein, B complex vitamins and important minerals. Candies also provide concentrated caloric food energy, a desirable feature when weight loss must be corrected. Thus candy enjoys a worth-while place in the dietary not only during convalescence, but also during health.

COUNCIL ON CANDY OF THE NATIONAL CONFECTIONERS' ASSOCIATION

1 NORTH LA SALLE STREET • CHICAGO 2, ILLINOIS

Now fortified with Folic Acid and B vitamins-

Patients with chronic or nutritional anemias may be deficient in several factors essential for blood regeneration—iron, liver factors and B vitamins, including folic acid.

Each daily dose of Bēpron Fortified (1 fluidounce) supplies—

Total soluble constituents of 2 ounces of whole beef liver
3 grains of iron (Fe) as saccharated ferrous iron, equivalent to 9.6 grains of dried ferrous sulfate
5 mg. of folic acid
2 mg. of thiamine hydrochloride
2 mg. of riboflavin
15 mg. of niacinamide.

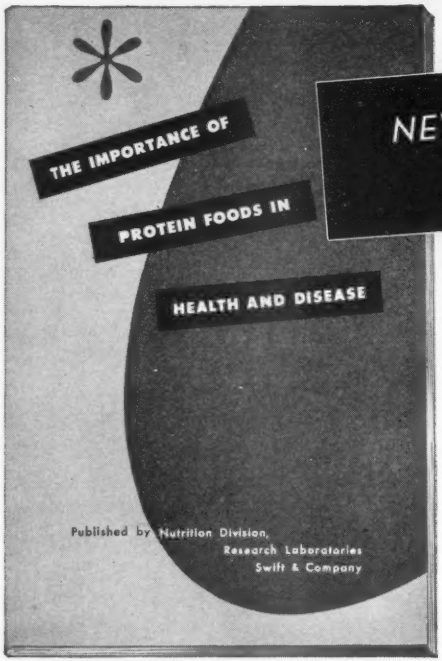
Bēpron Fortified is recommended for the treatment of chronic or nutritional hypochromic microcytic anemias, and for maintenance therapy of certain macrocytic or normocytic anemias.

Supplied in bottles of 16 fluidounces.

BĒPRON® FORTIFIED

Wyeth®

WYETH INCORPORATED • PHILADELPHIA 3, PA.



NEW... physician's handbook of protein-feeding

"The Importance of Protein Foods in Health and Disease"

Free—let us send you a copy now

Written by a practicing physician, in conjunction with the Nutrition Division of Swift & Company, this booklet provides a convenient source of reference for all the important, new, published findings concerning the value of protein in the human diet.

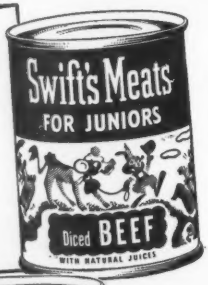
The booklet is broad in its scope, covering the subject from *the general significance of protein in nutrition* to specific *clinical aspects*. In addition, high-caloric, high-protein diets—for both oral and tube-feeding—are included. "The Importance of Protein Foods in Health and Disease" provides a practical, working handbook of protein feeding. Let us send you your copy now. Simply write Swift & Company, Dept. S.M.B., Chicago 9, Illinois.

Palatable answer to many problems of protein supplementation

The new Swift's Strained Meats are being used more and more in soft diets where a high-protein intake is indicated. The six kinds of Swift's Strained Meats—beef, lamb, pork, veal, liver and heart—provide an exceptionally palatable source of *complete, high-quality proteins*, B vitamins and iron. Developed originally for infants, Swift's Strained Meats are 100% meat, soft and fine in texture—easily adaptable to tube-feeding.

The booklet "The Importance of Protein Foods in Health and Disease" is accompanied by a supplementary pamphlet containing simplified high-protein diets, for both oral and tube-feeding, using Swift's Strained Meats. Send for your copy today.

Also Swift's Diced Meats . . . where textures of foods indicated may be less fine, you may find these tender, juicy cubes of meat desirable.



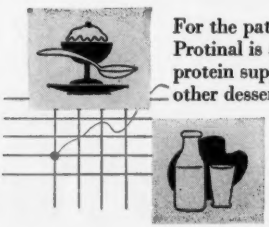
ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

All nutritional statements made in this advertisement are accepted by the Council on Foods and Nutrition of the American Medical Association.

SWIFT & COMPANY
Chicago 9, Illinois

SODIUM-FREE INTACT PROTEIN THERAPY

In giving the elderly patient supplemental proteins there is no longer a need to accept increased sodium intake in the bargain. Through intensive research, The National Drug Company has succeeded in reducing the sodium in a *complete protein* product down to 0.05 per cent—a negligible amount.



For the patient capable of metabolizing whole proteins, Protinal is a digestible, pleasant-to-taste, concentrated protein supplement. Mixed with a tasty pudding or other dessert, or dissolved in milk, 20 grams with each meal will frequently suffice to bring the patient's protein up to the optimal. The dosage should, of course, be adjusted for each individual.

For sodium-free, complete protein therapy recommend
Protinal

Protinal is available in bottles of eight ounces and one pound (Chocolate and Plain)

Protinal
A PRODUCT OF MODERN RESEARCH

THE NATIONAL DRUG COMPANY • Philadelphia 44, Pa.
PHARMACEUTICALS, BIOLOGICALS, BIOCHEMICALS FOR THE MEDICAL PROFESSION

Q: How Can Hot Ralston Cereal Aid Older Patients?

A: *By helping combat common constipation; by releasing extra energy from foods; by supplying needed protein.*

Hot Ralston is Whole Grain Wheat With Added Wheat Germ

The wheat germ—best cereal source of thiamine (vitamin B_1)—promotes intestinal health; whole grain gently stimulates normal intestinal activity. Vitamin B_1 also helps release full measure of energy from carbohydrate foods.

Supplies Protein of High Biological Value

And older patients need protein to repair body tissues. Much of this protein can come from hot Ralston—to supplement that supplied by meat, milk, cheese.

Has Delicious, Satisfying Flavor

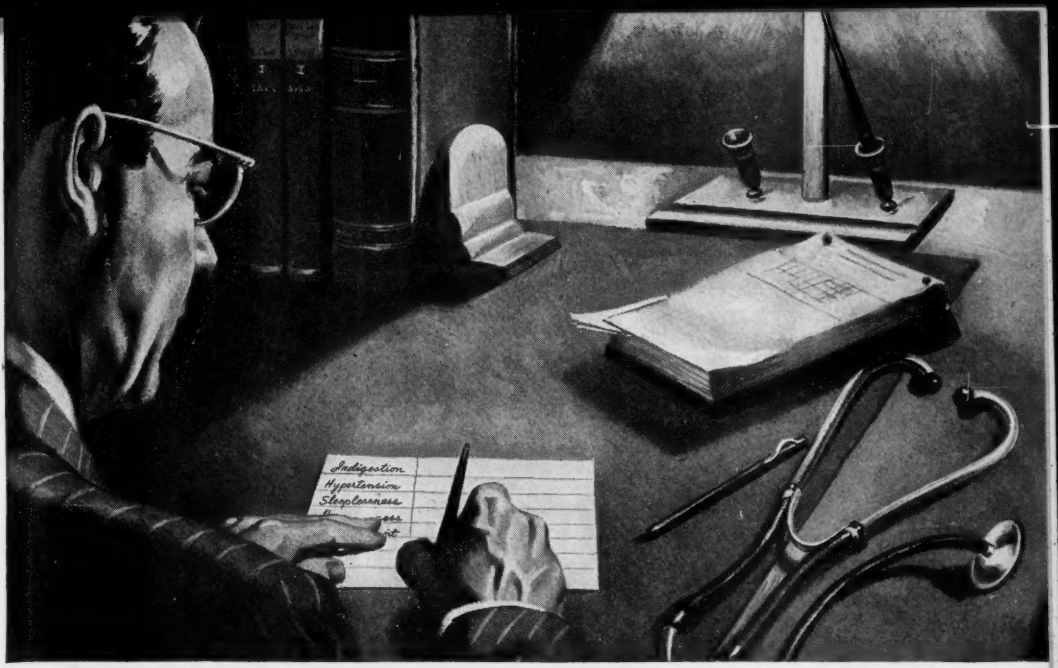
Hot Ralston, with its added wheat germ, has a rich heart-of-wheat-flavor that adds interest to bland diets.

TWO KINDS OF HOT RALSTON

COOKS IN 5 MINUTES

COOKS IN 10 SECONDS

RALSTON PURINA COMPANY
Checkerboard Square • St. Louis 2, Missouri



With your compliments: A trial supply of Postum for patients you've taken off coffee...

YOU KNOW that elderly patients . . . trying to break a long-standing habit like coffee . . . *resist less* and find it easier *not* to "backslide" if you recommend POSTUM instead.

So, we shall be happy to send a week's supply of POSTUM—free of charge—to patients you have taken off coffee.

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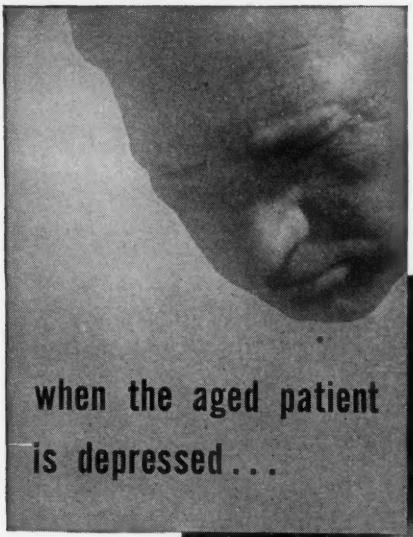

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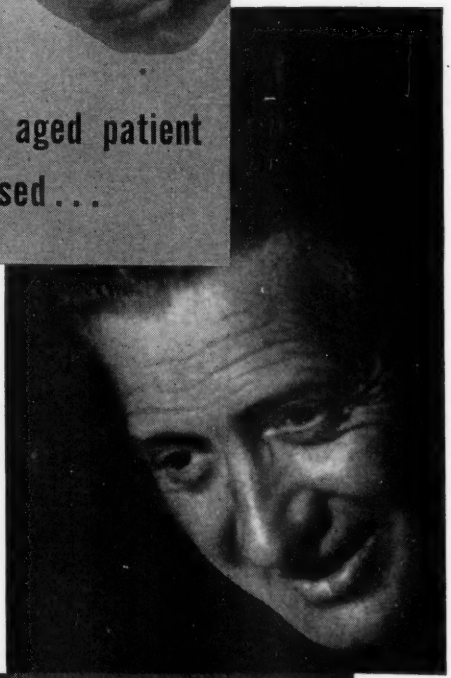

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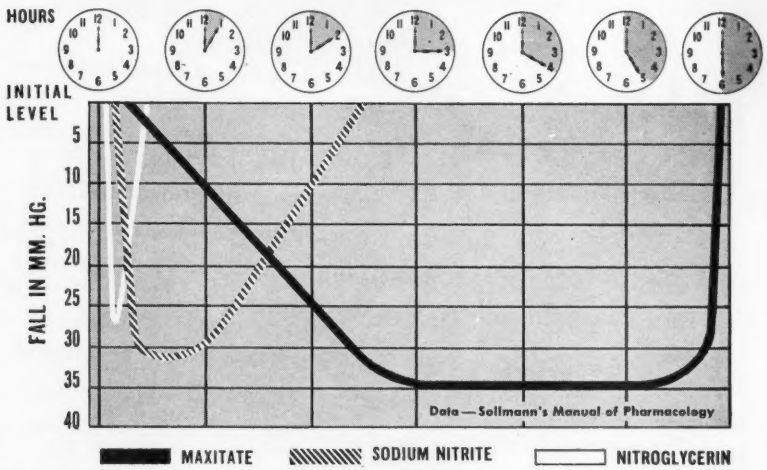

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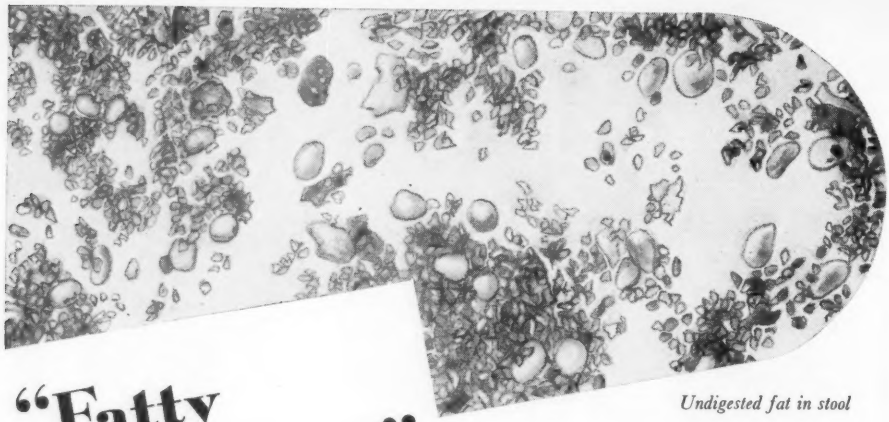

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Official Journal of the American Geriatrics Society

VOL. III, NO. I

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BIBLIOGRAPHY

1. Modell, W., Gold, H., and Clarke, D. A.: J. Pharmacol. & Exper. Therap. 84:284, 1945.
2. Thorn, G. W. and Tyler, F. H.: Med. Clin. North America, Sept. 1947, p. 1081.
3. Chapman, D. W. and Shaffer, C. F.: Arch. Int. Med. 79:449, 1947.

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SOME ASPECTS OF THE MORE COMMON PATHOLOGICAL FINDINGS IN A HOSPITAL FOR CHRONIC DISEASES

Julius Rosenthal, M.D. and Irwin Feigin, M.D.*

The pathologist of a chronic disease hospital concerns himself mostly with patients in the older age groups. As the name implies, his material is obtained from those afflicted with chronic rather than with acute diseases, although acute episodes may occur in these patients.

Pathological material frequently has the disadvantage of representing only the terminal stages of disease processes. Sometimes these processes are so advanced and accompanied by so much scarring that it is difficult to interpret the nature of the original lesion. Nevertheless, even in these cases, considerable information can be obtained regarding the course of the disease. In a chronic disease hospital this disadvantage is mitigated by the fact that the patients are observed clinically for a long time. The clinical background is of great advantage in helping the pathologist to reconstruct the course of clinical events from tissue examination.

With the advent of the newer therapeutic measures against many of the infectious processes, there has been an increase of the degenerative and the more chronic inflammatory conditions. These are the diseases which we have the advantage of studying over a comparatively long period of time.

CARDIOVASCULAR SYSTEM

Diseases of the cardiovascular system make up a considerable proportion of the material studied in our laboratory. These diseases are also becoming increasingly important in the everyday clinical experiences of the profession. It is only by the correlation of clinical, physiological, biochemical and pathological data that one can obtain a rounded picture of these diseases.

CIRCULATORY INSUFFICIENCY

Before proceeding with the pathological findings, we should like to consider one of the outstanding factors associated with lesions in or by this system, namely, circulatory insufficiency. From a pathological standpoint, diseases of this system frequently become manifest when its tissues or those supplied by it begin to receive an inadequate supply of blood.

The term circulatory insufficiency has long been in use for a description of the alterations of circulatory dynamics in heart failure. More recently

*From the Department of Pathology, Goldwater Memorial Hospital, New York City.

the term coronary insufficiency has become popularized, and not without reason, for it serves to explain certain types of heart disease. What one must keep in mind is that organ circulatory insufficiency is not limited to the heart but may occur in many organs, in fact it may occur in the territory supplied by any vessel, if certain conditions arise. Furthermore, the changes in tissue supplied by a damaged vessel need not be entirely proportional to the degree of damage of the vessel itself.

No ischemic changes are to be expected in the supplied tissues if the blood supply is adequate, regardless of the state of the vessel. On the other hand, with comparatively little damage of a vessel, its supplied territory may be inadequately nourished. Generally it can be said that the adequacy of blood supply will depend on two factors: (1) The actual amount of blood supplied per minute and (2) the amount required by the tissues per minute. Each of these may vary independently, yet it is the relation between them which is the important factor in determining whether ischemic changes will occur in any tissue. Perhaps an example may clarify this. Assume that there is a tissue, such as heart muscle, whose supply under ordinary circumstances is fully three times as much as is necessary. Assume then, that a disease process occurs in the artery of supply such as the coronary, which reduces the blood supply to any part in half. The tissue will still receive sufficient blood for its purposes and no changes will result. Assume that no further change occurs in the artery of supply itself. The muscle may remain adequately supplied if the flow of blood is constant. However, should the circulation be decreased, as would occur if there was a fall of blood pressure, or an arrhythmia supervened, then the muscle may become ischemic. Alternatively, the muscle may become ischemic while the supply of blood is unchanged, if the demand for blood should become increased. This might result from an increase in the patient's work or exertion, or as the result of additional strain on the heart as might occur if hypertension should develop.

Pathologically, the results of circulatory insufficiency are encountered frequently. In the heart, its effects are seen as localized or diffuse areas of tissue loss and fibrosis. In the brain, its effects are manifested by atrophy of various degrees, in the kidney as smaller or larger areas of scarring. Similar areas of fibrosis of various sizes, may be seen in the pancreas, thyroid, spleen and occasionally in other organs.

Among the diseases in which the factor of circulatory insufficiency may be an outstanding one is hypertension. Narrowing of the smaller arteries is frequently seen in the latter stages of this disease (and is assumed to be functionally present in the earlier stages). This constriction is not equal in all the organs, but whatever organ is prominently involved, be it heart, kidney, brain or any other parenchymatous organ, that organ is apt to become a focus of a disturbance when it finally obtains an insufficient blood

supply. Thus, for example, we have seen at autopsy, markedly hypertrophied hypertensive hearts which had coronary vessels with unusually large calibers where the patients nevertheless died of circulatory failure. Apparently the large coronary arteries enabled the heart to hypertrophy, but due to progressive arteriosclerosis of the smaller vessels a stage was finally reached when the myocardium received an insufficient supply of blood. The terminal events were then caused by local circulatory insufficiency. A comparable train of events may be envisaged in the occurrence of uremia in hypertensive kidneys.

HEART

Heart disease is, of course, common in the older age groups. Coronary disease is perhaps the most common, with hypertensive disease a close second. The two may be associated and frequently are. Next in the order of frequency, in our experience, is chronic rheumatic disease, and last syphilitic. Acute and subacute bacterial endocarditis are occasionally seen. Congenital disease is rarely found after 60. All other types of disease are exceedingly rare. We have avoided using the general term "arteriosclerotic heart disease" because like the term "chronic myocarditis" of the past, it relieves one of the necessity of making a definite diagnosis, since arteriosclerosis may occur in the coronary vessels, in the aorta, in the valve leaflets and in the valve rings, in each case with a different clinical significance. We prefer to use such terms as arteriosclerosis of the coronary vessels or of the aorta, etc.

When one speaks of coronary vessels one must not limit himself to the larger vessels. "Small artery" involvement is particularly common in hypertension. The disease of such arteries may be of great importance and the involvement of a small vessel in a vital region of the heart, such as the conduction system, may be associated with marked damage to the heart and even with sudden death, if circulatory insufficiency occurs. Some cardiac catastrophe, not accompanied by any gross changes in the heart, may be due to such an etiology.

Coronary insufficiency, either acute or chronic, frequently occurs. Acute coronary thrombosis is not frequently seen in advanced age. It is remarkable how the wall of large coronary vessels in older patients may be thickened, the lumen markedly narrowed, evidence of old or recent myocardial infarction present, the patient dying from coronary insufficiency, and yet no evidence of an acute thrombosis is found in the involved vessel. Actual thrombosis of coronary vessels in older people is relatively uncommon and although it is sometimes seen, nevertheless, the finding of infarcted myocardium due to circulatory insufficiency without an actual thrombus formation is the rule.

It is of interest that evidence of coronary insufficiency, including organized infarction, may be found post mortem without a history of anginal pain, without definite clinical signs and with negative or equivocal electrocardiographic findings. One is therefore impressed with the difficulty of making

a diagnosis of coronary disease in some cases and of the necessity of meticulous clinical observations, as well as of repeated electrocardiograms, to establish a true diagnosis.

In our experience, chronic rheumatic valvulitis is not a rare finding and is sometimes seen even in the ninth decade. We have seen such "benign" mitral stenosis of rheumatic origin in advanced ages. Reactivation, as shown by the accumulation of inflammatory cells in the valves is occasionally seen. Active myocarditis is much more rare.

Syphilitic disease of the aorta and aortic valve in the latter age groups is accompanied by the superimposition of atheromatous material on the syphilitic process in the ascending aorta, the ostia of the coronary vessels and the aortic cusps. It is principally because of this added factor, that treatment of syphilitic aortitis in the latter decades of life is apt to be much less satisfactory than in earlier years.

LUNGS

Bronchopneumonia: This is, of course, a common finding at autopsy. Its evaluation is sometimes difficult. Many instances are terminal phenomena or secondary infections to the end stages of various diseases of the heart, kidney, brain, etc. Others are primary infections of the lungs. The terminal bronchopneumonias or lobular pneumonias are seen histologically as concomitants of congestion and pulmonary edema. Some of the alveoli containing fluid also begin to show the extravasation into them of various numbers of polymorphonuclears and macrophages. In the more severe cases, and presumably the more truly infectious cases, the amount of exudation is much more extensive, and bronchitis is more apt to be found. In neither of these conditions is there any stage that can be considered as red hepatization. The process depends essentially on the accumulation of inflammatory cells rather than fibrin in the alveoli. The differentiation between the secondary terminal pneumonias and the primary infectious ones is difficult. Post mortem bacteriological evaluations are not satisfactory. In fact, the difference between the two may be merely one of degree or of severity of infection.

Lipoid Pneumonia: In the examination of the records of 1,570 autopsies at Goldwater Memorial Hospital by Dr. William Knapp, there were 69 instances of lipoid pneumonia. About one-half of the cases were on the neurological service which constitutes only about 30 per cent of the hospital patients. Actually, this number is probably a conservative one and some cases of lipoid pneumonia are not sufficiently large to be recognized and are overshadowed by the terminal lung pathology.

The disease is an insidious one and is not always recognized clinically or even on gross examination of the organs. It is seen particularly in the debilitated and especially in neurological patients, although it may be found in others. Clinically, the picture is usually one of a chronic bronchitis or of a vague chronic pneumonitis. Because of an unusual X-ray appearance, the

patient may be held under observation for a primary lung neoplasm, which remains atypical. Even on gross examination of the organs at autopsy, the diagnosis may not be clear, and the disease may be confused with tuberculosis, bronchopneumonia, lobar pneumonia, tumor of the lung or suppuration of the lung. Suffice it to say that when an elderly patient presents a bizarre lung picture the possibility of lipoid pneumonia should be considered, especially if it is known that this patient received mineral oil. It has been the adage of our department that what boric acid is to the infant, mineral oil is to the aged, to the neurological patient and to the debilitated.

Grossly, the disease may manifest itself by areas of consolidation which may be localized or diffuse. It is usually accompanied by a chronic bronchitis. The lower lobes are the ones most apt to be involved but the infiltration can occur in any lobe or in all the lobes, although the latter is rare. Characteristically, it appears as a grayish infiltration resembling bronchopneumonia in the diffuse type or like a discrete gray consolidation in the localized type. Frequently fatty material can be expressed from the lung on manual pressure. Microscopically, the diagnosis is easily made from the finding of fat globules, and the macrophages or foam cells filled with fat. Occasionally, the more severe and necrotizing type are found. Various degrees of terminal bronchopneumonia may be found at autopsy to accompany the lesions.

Tuberculosis: Contrary to the popular misconception, tuberculosis is not an uncommon disease in the aged. In 1,377 autopsies at Goldwater Memorial Hospital there were 157 which were diagnosed pathologically as showing organ tuberculosis, an incidence of 11.4 per cent. These lesions were not small token foci, but rather foci of appreciable magnitude and importance. Among them were 129 cases of tuberculosis of the lungs of which 59 were classified as healed and 70 (5.3 per cent of all autopsies) are nonhealed. This number is a conservative one, since cases that show positive sputum are transferred immediately upon diagnosis to hospitals for tuberculosis. The 129 cases found in the lung were classified as follows: miliary 16, active fibroid 33, fibrocaseous 30, silico-tuberculosis 1, healed 59.

All types of the disease were found at autopsy, including the old calcified lesions, the fibrotic, including pleural fibroses, as well as the hematogenous and bronchogenic disseminations. Acute fulminant lesions with cavitations were seen often enough not to be considered rarities. Positive sputa were encountered with considerable frequency. However, since the old and debilitated have difficulty in bringing up sputum, repeated gastrics may be needed to establish the diagnosis.

Next in order of frequency to the lungs, the other organs involved were as follows: lymph nodes 36 cases, liver 22, pleura 10, kidney 10, prostate 4, peritoneum 4. In some of these tabulated cases the disease occurred simultaneously in more than one organ.

The frequency of this disease in the elderly patient is of great clinical

significance. Both at home as well as in institutions some of these patients, usually considered cases of chronic bronchitis, constitute a menace to their associates. The possibility of the presence of this disease must be carefully considered in the diagnosis of lung pathology.

Surgical tuberculosis is not very common but is occasionally seen. Tuberculosis of the peritoneum is sometimes found at operation and is sometimes easily mistaken grossly for metastatic malignancy. Tuberculosis of the uro-genital organs and particularly of the kidney is occasionally found. Tuberculous fistulae of the rectum are rarely found.

Primary Carcinoma of the Lung: This disease, as is well known, is on the increase. The types found are usually given as the epidermoid, the cylindrical or "oat cell" type and the adenocarcinoma. The latter is the rarest. The clinical picture varies greatly. Distant metastases may be the first clinical intimation of the existence of the disease.

One problem that has confronted us is the diagnosis of malignancy by bronchoscopic biopsy. It must be stated that the term bronchogenic carcinoma refers to a carcinoma arising in a bronchus. This need not be a large bronchus; frequently it is a small one. The possibility of obtaining a biopsy depends on whether the lesion is accessible, i.e., is found in a large enough bronchus. Consequently, the finding of a negative biopsy need not necessarily exclude the presence of a tumor. The newer technique of cell study on aspirated bronchial material may be of help in establishing the diagnosis. Repeat biopsies may be needed with either technique.

Boeck's Sarcoid: Although this disease is usually one of the younger age group, it may be occasionally found in older patients. Involvement of lymph nodes, skin, lung, spleen and liver are common. Rarely there is also involvement of bones, kidneys and eyes. Splenomegaly may be a notable clinical feature. The disease heals essentially by fibrosis and hyalinization without calcification. With healing of the lesions in the lungs there may be extensive pulmonary fibrosis and right heart failure. The etiology of the disease is unknown. Much has been written about a possible tuberculous origin, which can neither be proved nor denied. We have recently reported four cases with necropsies. In none of them was tuberculosis a cause of death.

LIVER

The inflammatory lesions found in the liver in advanced age frequently resemble those of the kidney in the sense that they are fibrotic and that their antecedent histories are difficult to evaluate. Evidence of circulatory insufficiency due to arteriosclerosis are not generally seen. The liver, having a double supply of blood both from the systemic as well as from the portal system, is generously supplied with blood. Nevertheless, evidence of circulatory insufficiency with consequent liver damage does occur. Thus, in right heart failure, the liver is over supplied with blood, but because of a retarded circulation, the liver cells still become damaged due to anoxemia.

The more outstanding lesions found in the liver and in its passages in older age are cirrhosis, gall bladder disease and primary carcinoma of the liver.

Cirrhosis: The most common types of cirrhosis are portal, cardiac, toxic and biliary, in that order of frequency. We have recognized no cases of Hanot's cirrhosis nor have any cases of hepar lobatum cirrhosis been included in our material.

The specificity of the various types of cirrhosis as described in many text books is not quite as clear-cut as they would lead one to believe. Some authors, for example, delineate a specific type of cirrhosis which they call "fatty cirrhosis." Others state that "fatty cirrhosis is portal cirrhosis plus fatty infiltration." The same difficulty is encountered in the case of the so-called "pigment cirrhosis."

It is the similarity of the various types of cirrhosis rather than their difference that is impressive. The reason for this similarity is not difficult to see. Cirrhosis is not a peculiar disease entity but is rather the end stage of liver damage due to a variety of causes which may be infectious, including virus disease, toxic, circulatory or nutritional. Sometimes several etiological factors are combined.

Cirrhosis of the liver is not a common disease but it may occur at any age, and so-called "early cirrhosis" may be found in patients of advanced age without any clinical suspicions. The question as to whether these cases began early in life or whether they were essentially slowly progressive cannot be answered. Nor can the possibility be disregarded that nutritional states associated with old age may be precipitating factors for cirrhosis to begin or to progress later in life.

Primary Carcinoma of the Liver: This disease is not a common one. It is most often found with cirrhosis but may occur independently. Two well-known types are recognized: (1) cholangiomatous and (2) liver cell type. Each one of these has several variants. Focal metastasis to distant organs is unusual but may occur.

GALL BLADDER

Gall bladder disease is frequently encountered in autopsies of elderly patients of both sexes. In the fifth to eighth decades the percentage is relatively larger in females but in the eighth decade the incidence is about equal in both sexes. Gall stones are found frequently and in the seventh decade, about 25 per cent of the males and about 35 per cent of the females show their presence. Most of these cases give no history or physical signs sufficient to warrant a diagnosis of gall bladder disease. Symptoms develop in about 10 per cent of these cases but not all of these are recognized as being due to gall bladder disease and most of them are not severe. The large majority of gall stones have no effect on the patients' health or longevity. Their importance lies principally in the fact that their presence may be misinterpreted for the abdominal symptoms produced by other and more serious causes.

On the other hand, surgical disease of the gall bladder in advanced age is a severe disease, the seriousness of which should not be minimized.

STOMACH

Diseases of the stomach in old age are principally neoplastic. Nevertheless ulcers of the stomach are not rare at any age. We have not found the rule to be true that ulcers having a larger diameter than 2 cm. are necessarily malignant. Compared to the number of patients who present symptoms of gastric or duodenal ulcer during life, the number seen at autopsy is small. Scars of old ulcers of the stomach or duodenum are rare, and most ulcers that heal apparently do so completely with complete restoration of the mucosal pattern. Malignancy of the duodenum is very rare. We have recently had one case of carcinoma of the duodenum arising from the papilla of Vater and have also had one case of leiomyosarcoma of the duodenum.

Of special clinical interest is the finding at autopsy of large chronic ulcers of the stomach or duodenum with indefinite clinical histories, with negative physical findings, and sometimes even with negative X-ray findings. We have seen this on a number of occasions so that we hesitate in accepting one negative X-ray series as an absolute criterion for the exclusion of ulcer of the stomach or duodenum in our age group. Some of these cases are a challenge to the diagnostic abilities of the clinician.

KIDNEY

Disease of the kidney is especially frequent in the older age group. This refers especially to the diseases associated with arteriosclerosis of the larger or smaller vessels. Pyelonephritis is also seen with considerable frequency, particularly in patients with disease of the bladder or prostate. Glomerulonephritis is comparatively rare. Amyloid disease and intercapillary glomerulosclerosis are met with some frequency.

The diagnosis of the advanced type of kidney disease may offer great difficulty to the pathologist. Some cases are impossible to decipher. The reason of course is that the pathologist deals with scarred processes on which various degrees of arteriosclerosis are superimposed. What makes the diagnosis even more difficult is the fact that several diseases may occur together. Thus, for example, arteriolarsclerosis of the kidney is not infrequently superimposed on chronic pyelonephritis.

The diagnosis of the milder types of healed pyelonephritis and their differentiation from scars of the kidney due to local circulatory insufficiency is very difficult. Unless one bears this in mind, one will find evidence of so-called pyelonephritis in many kidneys of the aged. We prefer to make the diagnosis of pyelonephritis, chronic or healed, only when the lesion is beyond question.

PROSTATE

Benign Hypertrophy: This is an extremely common condition and is found at autopsy of most patients in the advanced age group. We do not

wish to enter into the controversy as to whether the condition is a true adenoma. In some respects it reminds me of interstitial mastitis where there is also a fibrous and glandular hyperplasia. The degree of symptomatology varies widely, depending in a large measure on the extent of the enlargement and its location. Enlargement of the median lobe because of its relationship to the urethra is particularly apt to give symptoms. In our experience, benign hypertrophy is not a predisposing cause of carcinoma of the prostate. The cause of prostatic hypertrophy is unknown but is now thought to be associated with endocrine disturbances.

Cancer of the Prostate: The frequency of this finding varies with the criteria of different pathologists for this diagnosis. In our experience, it is a comparatively rare condition. In an analysis of 1,081 male autopsies at our hospital by Dr. Seymour Philo, 24 cases of carcinoma of the prostate were found or 2.2 per cent of the total number of male autopsies. The disease is rare below the age of 60 as can be seen from the following table:

CARCINOMA OF THE PROSTATE BY DECADES—24 CASES

Age by Decades	No. of Autopsies	Cases of Carcinoma	
		No.	%
40-49	92	0	0
50-59	202	1	0.5
60-69	278	6	2.2
70-79	296	9	3.0
80-89	135	8	5.9
Total	1003	24	

Metastases were found to occur in 33⅓ per cent of this series, among which were found 5 cases of metastases to bone, or 21 per cent.

The level of acid phosphatase in the blood is usually a good indication of the development of metastases or their regression after orchiectomy or estrogen administration. One must keep in mind, however, that the test is not infallible, that a rise of acid phosphatase is of more diagnostic import than a normal acid phosphatase and that bone metastases may occur with normal acid phosphatase value. Histologically, all our cases were considered adenocarcinoma. Sarcomas, including leiomysarcoma, have been reported but did not occur in our series.

SUMMARY

We realize, of course, that the diseases considered in this review do not represent a complete list of those encountered in a chronic hospital. Nothing has been said for instance about the numerous cases of central nervous system disease which belong more to the province of the neuropathologist, nor about the various types of arthritis, and little has been mentioned about the neoplastic diseases. However, this paper is limited to a consideration of some of the more interesting pathologic findings encountered in our hospital according to our experience.

The authors wish to express their thanks to Miss Isabel Klein, Secretary of the Department of Pathology, Goldwater Memorial Hospital, for her assistance with the preparation of this paper.

GERIATRICS AND PUBLIC HEALTH

J. R. McGibony, M.D.*

The clinical treatment of the aged embraces almost every mystery that still baffles medical science. The leading causes of death in the United States last year—diseases of the heart, cancer and other malignant tumors, intracranial lesions of vascular origin and nephritis—each is a problem of geriatrics. Such diseases are crippling millions of mature persons who are now doomed to linger for years this side of death and that side of life. Geriatricians bring them hope. As this work develops, more and more aging persons will find renewed vigor and opportunity to engage in productive work.

The problem of caring for the aged is not only a medical one. Increased life expectancy, low birth rate, reduced immigration, and modern medical care are among the many factors that have changed the population structure of our country. We are no longer a young nation. As a result, our present 20 to 60 year-old working group is finding it more and more difficult to support all age groups. The presence of a large, unproductive, and unhealthy segment of manpower creates a financial burden that endangers the national economy. Industry and government must join with medicine in solving this problem.

The Federal government is becoming increasingly active in this partnership. In the research aspect, Congressional authority permits the Public Health Service to conduct and promote investigations "relating to the causes, diagnosis, treatment, control, and prevention of the physical and mental diseases and the impairments of man." Under this broad license, Public Health Service investigations are going on in many fields that may prove of value to the practice of geriatrics.

Of most immediate value is the work being done directly in the field of gerontology. A Public Health Service research unit in that science was established by Dr. Thomas Parran, Surgeon General of the United States Public Health Service, in July of 1940. Dr. Parran also appointed a National Advisory Committee on Gerontology and convened that body in Washington in November of the same year. After considering the problem from a national viewpoint, the Committee recommended that a survey be made of all active and contemplated studies on gerontology as a basis for a comprehensive plan of action. It further recommended that the Service undertake basic studies of the physiological, biochemical, and psychological changes associated with the aging process.

The survey was undertaken by Dr. Edward J. Stieglitz, then Consultant in Gerontology to the National Institute of Health, and a report was

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published in 1942. Dr. Stieglitz commented that although there were a considerable number of investigations going on, they were widely scattered both geographically and scientifically. The report did serve to point out, however, areas of the field that were being neglected and in which research could profitably be carried on.

Following this survey, the Public Health Service expanded its experimental program in gerontology in laboratories established in the Baltimore City Hospitals, with the cooperation of the Department of Public Welfare of Baltimore City. Studies were initiated concerning the effect of aging on kidney function, and the ability to excrete acids and alkalis. From 1943 to 1945, however, this project was practically suspended because our services were needed for experiments requested by the War Department.

With the war's end, facilities were expanded and personnel increased in preparation for large scale operations. The Baltimore City Hospital made one entire wing of its Chronic Disease Hospital available and paid for all necessary alterations, equipment and laboratory furniture. Nevertheless, the National Institute of Health has long felt the need for more adequate and centralized clinical research facilities. Congress is now considering the appropriation of money to purchase a site for a clinical research hospital, where studies will be conducted in cardiovascular diseases, diabetes, cancer, and other problems related to geriatrics.

One of the most important research projects under way at present concerns cardiovascular illnesses. The recently developed electrokymograph now makes possible the early detection of some types of heart disease; thus, we may have a greater degree of control over what has been a sizeable problem to medical practitioners. Other projects include studies on the working capacities of older people with respect to metabolic and cardiovascular factors; methods of conserving and improving kidney function; metabolic changes with age; endocrine changes with age; the renal factors involved in congestive heart failure and edema; the dietary needs of elderly people; and the effect of aging on perceptual and learning capacities.

The Public Health Service is initiating several projects of another character in the field of gerontology. About twenty-five years ago, a series of studies was made of 1500 to 2000 families in Hagerstown, Maryland, to obtain a picture of the sickness incidence in the population over a long enough time to distinguish it from the sickness prevalence at a given instant of time. Periodic surveys of these families have since been conducted with all the advantages of steady, prolonged observation.[1] It is planned now to study in the Hagerstown group the probability of acquiring certain chronic diseases at different ages—that is, their incidence by ages; and the relationship between general environmental factors and the survivorship for certain chronic diseases. A second study, to be made in Baltimore, will be directed toward determining the survivorship and amount of medical care received

and the occupational changes in relation to diseases occurring in aged and aging population groups.

Elsewhere, in many parts of the country, research projects are going forward with the assistance of Federal funds. A national program of government assistance to independent institutions and individuals for basic research was inaugurated in 1944. This Research Grants Program actually got into operation late in 1945, and until March 1947, over four million dollars had been granted to 86 organizations in 31 States. About $298,000 of the total sum was granted for 14 projects in the field of geriatrics.

The Research Grants Division is receiving about a thousand new applications a year, and Congress is considering an appropriations bill which would provide approximately five million dollars for research during the next twelve months. In terms of the Congressional authority, investigation "relating to the causes, diagnosis, treatment, control, and prevention of the physical and mental diseases and impairments of man" falls within the scope of Public Health Service research and grants. With such broad authority, it is natural that there are many projects under way or contemplated which will shed light on problems of gerontology, although they fall nominally into different categories. Studies in cancer, psychiatry, neurology, physiology, biochemistry, nutrition, surgery, and biophysics, for example, may produce results which will prove of benefit to our aging people.

The National Mental Health Act passed in 1946 launches another Federal program that will help materially in reducing mental casualties in old age. The feeling of not being wanted, economic insecurity and increasing loneliness have combined to make mental health in the aged a prime problem. In many cases, physical recovery has been long delayed by an unhealthy state of mind.

The Act covers three broad phases of mental health: research, training, and mental health services in local communities. Congress is now considering an appropriation of 3 million dollars for State grants to aid in establishing local mental health services. States may also use this money for training purposes. In addition to State grants, funds are now being authorized for research and training purposes including undergraduate and postgraduate training of psychiatrists, and postgraduate training of psychologists, psychiatric nurses and psychiatric social workers.

The Act also authorizes the construction of a National Institute of Mental Health in the Washington area. Clinical and laboratory research will be conducted by a full-time staff and groups of advanced students. Private universities, institutions and individuals will complement and support this work, as in other fields of research, through grants-in-aid. Training stipends will be given to students and grants to public or non-profit institutions will be made for the purpose of developing their training facilities.

Another of the major problems in geriatrics is being attacked by the

National Cancer Institute and by State cancer control programs which are aided by Federal funds. Although the cause and cure of cancer is still unknown, it is estimated that one-third of our cancer victims could be saved by a wider application of existing knowledge. As a result, Congress is considering a sizeable increase in funds for cancer research and control. State cancer control programs are being aided and encouraged and research studies are being conducted in more than twenty areas. Systems of grants, stipends, and fellowships, similar to those already mentioned in connection with mental health operate in this field as well.

One of the greatest problems in geriatrics has been the lack of hospital facilities for the care of patients. A new Division within the Public Health Service has been established to assist in correcting this shortage. In August, 1946, Congress passed the Hospital Survey and Construction Act. Its purpose is to assist the States and local communities in providing adequate hospital facilities to care for all the people. Responsibility for surveying present facilities and estimating needed construction rests with each State, which must designate an official agency to conduct survey and planning activities. The Act authorizes the expenditure of $1,125,000,000 of combined Federal, State, and local funds over a period of five years. Almost all States have made considerable progress in their surveys, and are prepared to carry out the balance of the construction program. While both responsibility for the execution of the Act and freedom in planning their facilities reside in the States, Federal regulations have been established to ensure the most efficient expenditure of funds to benefit the greatest number of people. These regulations limit assistance to 4.5 general beds per thousand population, 5 beds per thousand for mental diseases, 2.5 beds per annual death for tuberculosis, and 2 beds per thousand for chronic diseases. The need for general, tuberculosis and mental disease beds has been determined to a fairly accurate degree. The need for chronic disease beds needs much more study, and it is here that geriatricians can make a very valuable contribution.

The Division of Hospital Facilities believes that chronic disease should be cared for insofar as possible in approved institutions which are a part of, or closely affiliated with, a general hospital. There is no desire to see the care of these patients develop into an institutional program of simple custodial care. Geriatricians can further the development of this program through enlightenment of the general public, the medical profession, and hospital administrators. It is emphasized again that this is not primarily a Federal program but a State and local one, and much of its success depends upon the leadership of local medical practitioners.

In making this brief report, only the main activities of the Public Health Service in geriatrics have been mentioned to show an awareness of the medical problems of older people.

It will take time to translate recently enacted health legislation into actual hospitals and trained professional personnel. Emergencies of the war period precluded normal construction of facilities and normal output of professional students. We must make up our losses before we can advance. It is heartening, however, to sense the health-mindedness of the American public and to benefit from a responsive Congress. We have a good many tools at hand.

Much difficult and sometimes discouraging work lies ahead but from such a base we can move into the future with confidence.

REFERENCE

[1]SYDENSTRICKER, V. P., Public Health Report, September 1946. Reprint No. 113.

CLUE TO AGING IS FOUND

Sludged blood in the arteries and veins holds the key to solution of problems of aging, mental illness and many other diseases, it appears from a report by Drs. Melvin H. Knisely, Edward H. Bloch, Theodore S. Eliot and Louise Warner, of the Universities of Chicago, Copenhagen and Tennessee, to the journal, *Science,* (Nov. 7).

In normal, healthy young persons the blood cells move along the veins and arteries, even very tiny blood vessels, without sticking to each other or to the walls of the blood vessels. But in a wide variety of sicknesses and in shock following accidents, the cells clump and stick together, forming a sludge which moves slowly if at all and which blocks to some extent the movement of blood not yet sludged.

Sludged blood has been seen in patients with conditions ranging from hysteria, burns and common colds to cancer, scarlet fever, infantile paralysis and arthritis, or rheumatism.

There are many different kinds of blood sludges, the scientists report. How a particular sludge can damage the body depends on the chemical makeup of the material holding the blood cells together in wads and on the size, shape and other physical characteristics of the particular sludge.

Many sludges could be expected to do at least small amounts of permanent damage to the body. How all the damages by sludges add up as parts of the aging process, and how fast they can add up over short periods of years need to be studied.

Dr. Knisely's studies of patients, healthy persons and laboratory animals from which discovery of sludged blood was made have been going on over 16 years. Many of them have been made by observing the small blood vessels in the eyelids and covering of the eyeball of living animals and patients. Oblique illumination and binocular dissecting microscopes were used.

Science News Letter, November 15, 1947

ACCIDENT HAZARDS OF OLD AGE: THE PHYSICIAN'S ROLE IN A PROGRAM OF PREVENTION

Frederic D. Zeman, M.D.*

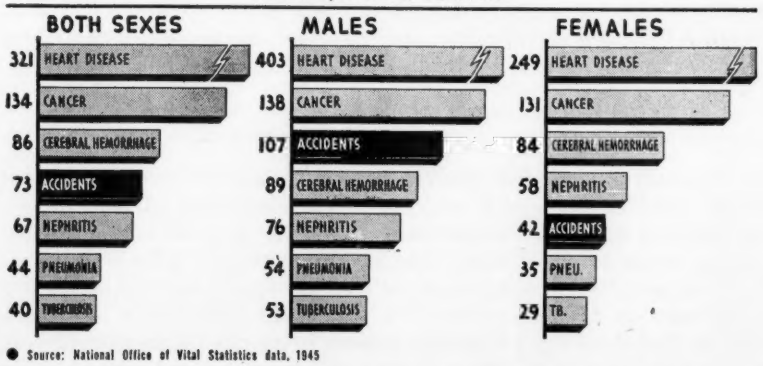
INTRODUCTION[1]

The appalling total of deaths and injuries resulting from accidents in this country constitutes a public health problem of the first magnitude. In spite of wide publicity and carefully planned educational campaigns, the great mass of our citizenry continues to exhibit apathy and indifference to this serious situation. The medical profession must join with private and governmental agencies in driving home the unpleasant truths to men and women of all ages and in every walk of life.

In 1945, accidents ranked fourth as a cause of death in both sexes, the rate being 73 per 100,000 and the total number of fatalities 99,000. Accidents in men attain third place with a rate of 107, heart disease and cancer being the leaders. In women, accidents with a rate of 42 rated fifth place, following heart disease, cancer, cerebral hemorrhage and nephritis (Tables 1 and 4). Death rates, however, tell only part of the story. Non-fatal injuries totalled 10,400,000, a ratio of more than 100 to 1. Here are included cases resulting in loss of time from usual activities beyond the day of injury. It will be seen

TABLE 1

CHIEF CAUSES OF DEATHS, 1945
PER 100,000 POPULATION



● Source: National Office of Vital Statistics data, 1945

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TABLE 2

ACCIDENTAL INJURIES BY SEVERITY OF INJURY, 1946

Severity of Injury	TOTAL*	Motor Vehicle	Public Non-Motor-Vehicle —Civilian	Home—Civilian	Occupational-Civilian	Military Personnel
*All Injuries**	*10,500,000*	*1,250,000*	*2,100,000*	*5,000,000*	*2,050,000*	*200,000*
Deaths	99,000	33,700	17,000	33,000	16,500	2,100
Non-Fatal Injuries*	10,400,000	1,200,000	2,100,000	4,950,000	2,050,000	200,000
Permanent Impairments†	*370,000*	*100,000*	*50,000*	*130,000*	*90,000*	*6,000*
Temporary Total Disabilities	*10,000,000*	*1,100,000*	*2,050,000*	*4,800,000*	*1,950,000*	*200,000*

Source: National Safety Council approximations (rounded) based on data from the National Office of Vital Statistics, state industrial commissions, state traffic authorities, state departments of health, insurance companies, industrial establishments, and other sources.

*Duplications between motor vehicle, occupational, and military personnel are eliminated in the TOTAL column. The All Injury and Non-Fatal injury figures are the rounded sums of detailed items.

†The term "permanent impairments" includes both permanent partial disability and permanent total disability. The above estimates thus include impairments ranging from the permanent stiffening of a joint or a finger amputation to permanent, complete crippling.

in Table 2 that many of these caused permanent impairments. Breaking down all accidental injuries into large groups by location, we find that those in civilian homes add up to nearly one-half of the whole figure, or 5,000,000, that occupational injuries number 2,050,000, public non-motor vehicle injuries 2,100,000, and motor vehicle injuries 1,250,000 (Table 2).

If we attempt to estimate the costs of these accidents in terms of money, leaving aside the suffering, the sorrow and mental anguish as immeasurable by mathematics, we find that the National Safety Council assesses $3,600,000,000 for wage loss, medical expense and overhead cost of insurance, $1,454,000,000 for property damage in motor vehicle accidents and fires, $1,300,000,000 for the so-called "indirect costs" of occupational accidents, making in round numbers a grand total of $6,400,000,000.

THE AGE INCIDENCE OF ACCIDENTS

In studying accidental deaths according to age and type we find that nearly a third of the total is made up of individuals over 65 years of age, and that falls and motor vehicles cause most of the fatalities, with burns and railway accidents contributing considerable percentages (Table 3). That this is no new development is apparent from the figures for total deaths and death rates per 100,000 covering the years 1913-1946 (Table 4). From 1922 to 1946 there was a 9 per cent increase in the rate for the over-65 year group and from 1945 to 1946, a decrease of 2 per cent. Consistently over the years, the rate for those over 65 years has run three to four times that of the 45-64 year group. "Persons 65 years old and older had the highest death rate in 1946 of the six age groups—285.4, or ten times the rate for children 5 to 14 years old."[1]

TABLE 3

ACCIDENTAL DEATHS BY AGE, SEX, AND TYPE, 1945

Age and Sex	ALL TYPES	Motor Vehicle	Falls	All Burns*	Drowning	Railroad	Firearms	Poison Gases	Poisons (except gas)
All Ages	*95,918*	*28,076*	*26,580*	*9,170*	*7,030*	*5,023*	*2,454*	*2,200*	*2,100*
Under 5	7,741	1,290	480	1,920	740	109	84	90	580
5 to 14	6,836	2,386	460	920	1,480	262	594	50	60
15 to 24	12,446	5,358	1,100	930	1,670	626	684	220	110
25 to 34	9,737	4,028	770	810	750	771	382	250	230
35 to 44	9,656	3,550	1,530	990	760	860	305	270	370
45 to 54	9,661	3,360	1,770	850	590	790	213	320	290
55 to 64	10,436	3,434	2,830	810	530	846	122	350	220
65 to 74	11,238	2,933	4,770	890	390	507	45	340	150
75 and over	17,855	1,681	12,850	1,030	80	226	20	310	90
Age not stated	312	56	20	20	40	26	5	0	†
SEX									
Male	66,339	21,687	13,490	5,400	6,030	4,222	2,113	1,480	1,200
Female	29,579	6,209	13,090	3,770	1,000	801	341	720	900
Per cent female	31%	22%	49%	41%	14%	16%	14%	33%	43%

Source: Calculated from National Office of Vital Statistics data.

*Includes burns by chemicals, fire, steam or any hot substance; also deaths from conflagration, regardless of nature of injury.

†Estimated less than 5 deaths.

TABLE 4

ACCIDENTAL DEATHS AND DEATH RATES, BY AGE, 1913 TO 1946

YEAR	ALL AGES	0–4 Years	5–14 Years	15–24 Years	25–44 Years	45–64 Years	65 Years and Over*
				DEATHS			
1913....	82,500	9,800	7,450	11,950	24,350	16,450	12,500
1918....	85,100	10,400	10,000	10,550	22,050	17,550	14,550
1922....	76,300	9,350	9,250	9,900	18,550	14,950	14,300
1923....	84,400	9,450	9,550	11,100	21,250	17,150	15,900
1928....	95,000	8,850	9,750	13,000	23,200	20,700	19,500
1933....	90,932	6,948	8,195	12,225	21,005	20,819	21,740
1938....	93,805	6,646	6,593	12,129	20,464	21,689	26,284
1941....	101,513	7,052	6,702	14,346	22,983	22,509	27,921
1942....	95,889	7,220	6,340	13,732	21,141	20,764	26,692
1943....	99,038	8,039	6,636	15,278	20,212	20,109	28,764
1944....	95,237	7,912	6,704	14,750	19,115	19,097	27,659
1945....	95,918	7,741	6,836	12,446	19,393	20,097	29,405
1946....	99,000	7,950	6,250	14,000	20,900	20,300	29,600
				DEATH RATES Per 100,000 Population			
1913....	85.5	89.6	37.4	65.2	86.1	112.5	281.7
1918....	82.2	91.0	46.4	56.7	72.1	106.5	295.0
1922....	69.4	81.0	40.8	50.5	57.1	82.6	260.8
1923....	75.7	82.0	41.7	55.6	64.5	92.6	281.7
1928....	79.3	77.2	40.3	59.7	65.7	100.2	302.5
1933....	72.4	65.5	33.4	53.6	56.3	90.8	295.3
1938....	72.3	65.3	28.5	51.3	52.5	85.4	308.9
1941....	76.3	64.9	30.3	59.8	57.2	84.3	302.8
1942....	71.7	63.7	28.9	58.1	52.5	76.5	282.3
1943....	73.9	66.4	30.3	66.8	50.7	72.9	297.8
1944....	71.8	62.6	30.6	69.3	49.2	68.2	280.6
1945....	72.7	58.9	31.1	61.9	50.8	70.6	290.7
1946....	70.8	59.3	28.1	61.9	49.5	70.0	285.4
				Percentage Change in Rates			
1922-1946	*+2%*	*−27%*	*−31%*	*+23%*	*−13%*	*−15%*	*+9%*
1945-1946	*−3%*	*+ 1%*	*−10%*	*0*	*− 3%*	*− 1%*	*−2%*

Source 1913 to 1928 calculated from National Office of Vital Statistics data; 1933 to 1945 are National Office of Vital Statistics national totals. National Safety Council estimates for 1946.

*Includes "age unknown"; in 1945 these deaths numbered only 312.

Tables 3 and 4 state in simple figures, therefore, the reason for this particular presentation to physicians. Thousands of old people either die or suffer serious injury from two principal causes, falls and motor vehicle accidents. The majority of the falls take place in the home. The writer strongly believes that many of these fatalities and crippling injuries are preventable and that physicians must give serious attention to their responsibilities since they know best the factors that favor accidents in their aged patients. Strictly speaking, all injuries sustained by older individuals are not accidental, since many are directly due to actual disease and others are predictable because of the presence of serious physical and mental defects.

In discussing the progress made in accident prevention since 1900, the National Safety Council points to the fact that population death rates for accidents do not take into consideration the increasing number of motor cars nor the greater average annual mileage traveled by each vehicle. Of even greater importance is the increasing average age of the population which has kept the death rate from coming down as rapidly as it otherwise would. The highest death rate every year has been for persons 65 years old or older, and over the years a larger and larger proportion of the population has lived to achieve this age. If the age distribution of the population from 1937 to 1946 had been the same as from 1900 to 1909, the average non-motor-vehicle death rate would have been 43 instead of 50—only half of the 1900-09 rate.[1]

FACTORS INFLUENCING SUSCEPTIBILITY OF AGED TO ACCIDENTS

In general the conditions leading to increased susceptibility to accidental injuries in old people are the changes of senescence and the superimposed accompanying diseases. Carlson has described as "progressive age changes not as yet shown to be due to specific diseases" such tissue and cellular abnormalities as dehydration, atrophy and diminished metabolic activity. In addition he emphasizes as general structural and functional modifications the following: impaired vision and hearing, diminution in attention, memory and mental endurance as part of the slow degeneration and atrophy of the nervous system, decreased strength of skeletal muscle, and decreased speed, strength and endurance of the skeletal neuromuscular reactions.[2] These are the impairments that would be found in varying degree in the so-called normally senescent individual. If we add the numerous disease conditions commonly found in the elderly, such as arteriosclerosis of the cardiac, the cerebral and the peripheral vessels, rheumatoid and proliferative arthritis and mental abnormalities in their many forms, we understand at once that a deaf old man or woman with bilateral cataracts is an easy victim for a careless automobile driver, especially when arthritis, cardiac weakness and slow reaction time make it difficult to jump back to safety. An old man subject to syncopal seizures as a result of carotid sinus hypersensitivity or Stokes-Adams disease may fall on the street or in the home and incur injuries rang-

ing from simple contusions to skull and long bone fractures with visceral injuries.

The secondary effects of accidents in the old are likewise of highest importance since lessened resistance to infection and weakened bone structures bring other sicknesses in their train. Elsewhere the writer has emphasized that accidental injuries of the skin, often apparently insignificant, may lead to serious infections and that commonly fractures of the neck of the femur and of the ribs pave the way for respiratory infections.[3] Fractures are frequent results of accidents in old people and in spite of modern improvements in therapy, entail long weeks of inactivity and are apt to produce permanent disabilities.

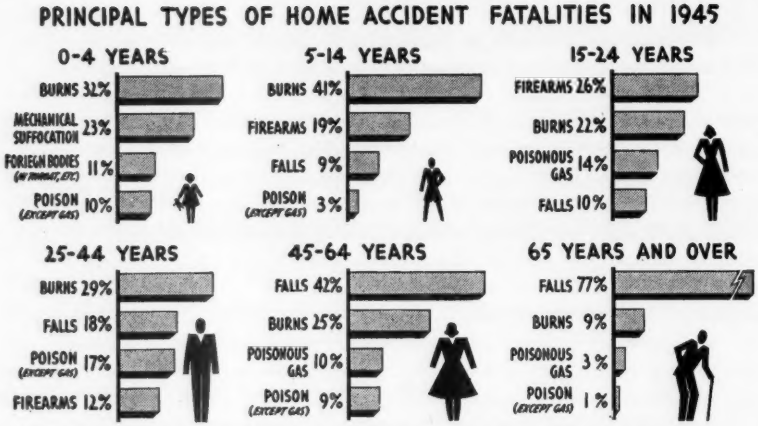
The aged patient confined to bed is not free from the accident hazard. In case of fire in home, hospital, or custodial institution, he cannot help himself, and is often a victim of smoke and flame before aid is available. Old patients not infrequently fall out of bed even in the best of hospitals and with the best nursing care. These accidents often occur during the first night's stay when the patient awakens, automatically swings out of bed, forgets the height of the hospital bed and falls on the floor on his face. Sometimes these accidents occur as a result of postoperative psychoses and sometimes as the result of sedative medication. Side-rails often provide a simple preventive measure. Side-boards are to be avoided as the patient often objects to being "boxed-in" or "boarded-up."

Among the mental peculiarities conducive to high accident incidence in old age may be mentioned the mental deterioration characterized by lack of comprehension of well-meant advice, by the negativism so common in the elderly which leads to doing the opposite of what is advised, and by the active resentment of any kind of regulation or restriction. In certain cases a subconscious "death-wish" may also be a factor. All motor drivers have been terrified by the aged woman who casually moves out into a stream of swiftly moving cars on a city street, calmly unaware of her surroundings and intent only on getting to the other side, until stopped by warning horns, at which she expresses violent annoyance.

The advanced memory defects of old people may lead to situations in which not only the life of the individual is endangered but also the lives of all living under the same roof. This is exemplified by the patient who deteriorated to the point where she would go into her kitchen, turn on the gas burner of the range and forget to light the gas. Fortunately she was institutionalized before any damage resulted. The possibilities are nonetheless horrifying.

The constitutional changes and diseases common to old age have been stressed as a warning against a too facile diagnosis of accidental injury in the aged. Every injured elderly individual must be examined carefully to detect changes in the central nervous system and the circulatory system.

TABLE 5



● Source: National Safety Council approximations based on data for 1945 from National Office of Vital Statistics

TABLE 6

DEATHS FROM HOME ACCIDENTS, CIVILIANS, BY TYPE AND AGE, 1945 AND 1946

Type of Accident	1946 TOTALS	1945 Details by Age Group: ALL AGES	0–4 Years	5–14 Years	15–24 Years	25–44 Years	45–64 Years	65 Years and Over
Total	*33,000*	*33,500*	*5,500*	*1,850*	*1,100*	*2,450*	*3,850*	*18,700*
Falls	16,500	17,100	370	170	110	450	1,600	14,400
Burns, explosions	5,850	6,100	1,800	760	240	700	950	1,650
Poisonings (gas excepted)	1,650	1,650	550	50	80	420	350	200
Mechanical suffocation	1,450	1,350	1,280	20	20	10	10	10
Firearms	1,450	1,200	70	350	290	300	150	40
Poisonous gas	1,250	1,500	80	40	150	300	400	530
Others	4,850	4,600	1,400	460	210	270	390	1,870

Source: Approximations by National Safety Council, based on data from National Office of Vital Statistics and other information. Details for 1946 not yet available.

ACCIDENT HAZARDS OF THE HOME

Since the chief location of accidents is the home and since the home is the background in which the practitioner sees most of his patients, it is worthwhile to analyze some of the factors involved. In Table 5 we note the principal types of home accident fatalities according to age groups. Falls are significant causes of death at all ages, increasing from 9 per cent in the 5-14 year group to 42 per cent in the 45-64 year group and finally to 77 per cent in the over-65 year category. Table 6 shows us how the total deaths from home accidents were divided by type and age: over 56 per cent were among the aged, being three times as frequent as in the next highest group, infants and young children up to four years, and eighteen times more frequent than in those aged 15 to 24 years.

In a series of home accidents studied at Cook County Hospital, Chicago, mechanical and personal causes were analyzed. In the first group, disorder,

improper equipment, improper use of equipment, house in poor repair, ice on walk and lack of light were to blame in the order named. Among personal factors, poor judgment and physical frailty were at fault in 35 per cent of the cases. The implication of these findings for the aged are obvious.

The observant physician must take steps to guard his aged and infirm patient against these home hazards by making the habit of appraising home situations as indispensable a part of his service as his examination and his prescription for medicine. Worn carpets, loose rugs, shaky bedside tables, too much furniture, all are visible to the doctor who appreciates their ominous significance. Too often the elderly invalid in getting out of bed at night has to traverse a veritable obstacle course to find his way to the bathroom. A clear unobstructed path will prevent many falls at night when darkness and sleepiness conspire to put unseen obstructions in front of the aged person. A shielded night light on the bedside table will aid materially in eliminating these hazards.

The high percentage of burns points the need for the protection of elderly women in their kitchens. One patient of the writer's pulled a kettle of boiling water over upon herself, and another lighted the gas stove while wearing a long sleeved kimono which promptly ignited. The Metropolitan Life Insurance Company has pointed out the dangerous practice, apparently common, of dozing while liquids are being heated on gas stoves. In one year's experience of this company, eleven people, 10 men and 1 woman, died from gas poisoning because, while they were taking a nap, the liquid on the gas stove boiled over and extinguished the gas.[4] Whenever possible, the hazards of the kitchen must be explained to patients, nor must one neglect to point out the dangers of the electrical equipment such as defective wiring, short circuits and over-heating. Mechanization of the home is time-saving but a high price is exacted from the careless, the frail and the unsteady older worker.

ACCIDENT HAZARDS OF MOTOR VEHICLES

In Table 7 we have an analysis of motor vehicle deaths by age, covering the period from 1913 to 1946. Note the general increase in the four oldest groups, most marked at the age of 15 to 24 years, but a 52 per cent increase in 24 years in the over-65 year group. An 8 per cent increase from 1945 to 1946 poses a real challenge to those of us interested in prevention. In Table 8, we have an analysis of traffic deaths and injuries by age groups and the frequency of deaths in relation to injury at various ages. Here we note that in the 15-24 year group, only 1 in 44 dies while in the 65-years and over category, 1 in 13 dies. In correlating the type and location of the accident and the age of the person, we find that cities and towns are most dangerous to old people, nearly all of whom are pedestrians. In general, two out of three deaths in cities over 10,000 population are pedestrians, while in rural areas and cities under 10,000, only one in four is a pedestrian. More than half of the pedestrians over 65 years of age were killed or injured while

TABLE 7

MOTOR VEHICLE DEATHS AND DEATH RATES, BY AGE, 1913 TO 1946

YEAR	ALL AGES	0–4 Years	5–14 Years	15–24 Years	25–44 Years	45–64 Years	65 Years and Over*
			DEATHS				
1913	4,200	230	1,010	560	1,150	850	400
1918	10,700	770	2,600	1,290	2,530	2,400	1,100
1922	15,300	1,030	3,190	2,150	3,850	3,280	1,800
1923	18,400	1,120	3,370	2,760	4,820	4,120	2,210
1928	28,000	1,500	3,760	4,790	7,230	6,740	3,980
1933	31,363	1,274	3,121	5,649	8,730	7,947	4,642
1938	32,582	1,122	2,511	6,016	8,772	8,711	5,450
1941	39,969	1,378	2,838	8,414	11,069	9,828	6,441
1942	28,309	1,069	1,991	5,932	7,747	7,254	4,316
1943	23,823	1,132	1,959	4,522	6,454	5,996	3,760
1944	24,282	1,203	2,093	4,561	6,514	5,982	3,929
1945	28,076	1,290	2,386	5,358	7,578	6,794	4,670
1946	33,700	1,600	2,600	7,650	9,350	7,350	5,150
			DEATH RATES Per 100,000 Population				
1913	4.4	2.1	5.1	3.1	4.1	5.8	9.0
1918	10.3	6.7	12.1	6.9	8.3	14.6	22.5
1922	14.0	8.9	14.1	11.0	11.9	18.2	32.8
1923	16.5	9.7	14.7	13.8	14.6	22.2	39.2
1928	23.4	13.1	15.6	22.0	20.5	32.6	61.7
1933	25.0	12.0	12.7	24.8	23.4	34.7	63.0
1938	25.1	11.0	10.8	25.4	22.5	34.3	64.1
1941	30.0	12.7	12.8	35.1	27.6	36.8	69.8
1942	21.2	9.4	9.1	25.1	19.3	26.7	45.7
1943	17.8	9.4	9.0	19.8	16.2	21.7	38.9
1944	18.3	9.5	9.6	21.4	16.8	21.4	39.9
1945	21.3	9.8	10.8	26.6	19.8	23.9	46.2
1946	24.1	11.9	11.7	33.8	22.1	25.3	49.7
			Percentage Changes in Rates				
1922 to 1946	*+72%*	*+34%*	*−17%*	*+ 207%*	*+86%*	*+ 6%*	*+ 8%*
1945 to 1946	*+13%*	*+21%*	*+ 8%*	*+ 27%*	*+12%*	*+39%*	*+52%*

Source: 1913 to 1928 calculated from National Office of Vital Statistics data; 1933 to 1945 are N.O.V.S. totals. National Safety Council estimates for 1946.

*Includes "age unknown." In 1945 these deaths numbered only 56.

TABLE 8

TRAFFIC DEATHS AND INJURIES BY AGE GROUPS

AGE	Number		Frequency of Death	Rates per 100,000 Population			
				Total		Pedestrian	
	Deaths	Injuries		Death	Injury	Death	Injury
All Ages	*33,700*	*1,200,000*	*1 in 35 dies*	*24.1*	*858*	*8.4*	*179*
0–4 Years	1,600	55,000	1 in 34 dies	11.9	410	7.5	224
5–14 Years	2,600	145,000	1 in 56 dies	11.7	652	6.7	359
15–24 Years	7,650	335,000	1 in 44 dies	33.8	1,481	4.0	133
25–44 Years	9,350	375,000	1 in 40 dies	22.1	888	3.9	83
45–64 Years	7,350	225,000	1 in 31 dies	25.3	776	10.9	155
65 Years and Over	5,150	65,000	1 in 13 dies	49.7	627	34.7	289

crossing at intersections. Nearly half of these accidents occurred at intersections with no lights. Time of day is an important factor in pedestrian deaths, especially in the fall and winter months, when four times as many pedestrians are killed in the first three hours after sunset as in the three hours just before sunset.

Two out of every three pedestrians killed in motor vehicle accidents were either violating a traffic law or committing an unsafe act. Crossing be-

tween intersections was a most flagrant violation, accounting for one-half of the deaths of pedestrians who were violating. Bad weather and defective highways are additional factors affecting the pedestrian. These observations based on nation-wide experiences furnish many suggestions for regulation of the activities of the ambulatory aged.

As regards drivers' offenses, it is noteworthy that the 25-44 year age furnishes the highest proportion of drivers involved in accidents and that the rate was lowest in the 60-year and over group. Older drivers seem to compensate for possible defects in vision, hearing and coordination, by proceeding with care. Alcoholism as a cause of traffic accidents is low among the elderly but does occur. A survey made by the writer some years ago of the states along the Eastern seaboard revealed that no state has a maximum age limit for issuing drivers' licenses. In one state such a limitation was considered but after a study of public opinion, the conclusion was reached that the amount of ill-will engendered would far outweigh any possible benefits. The physician must on occasion warn or even forbid patients with serious handicaps from driving a car and endangering the lives of others as well as himself.

SPECIAL ACCIDENT HAZARDS

Space limitation precludes detailed discussion of farm accidents, public non-transportation accidents, and public non-motor vehicle transportation accidents. In each of these groups the aged show a high rate of incidence. On the farm, for example, 29 per cent of fatal accidents occurred in the over-65 year division. Careful consideration of further statistics in these categories would confirm our opinion that aging and associated diseases, both mental and physical, increase the tendency to accidental injury and death.

FIRE HAZARDS IN PRIVATE DWELLINGS AND IN INSTITUTIONS FOR THE AGED

In discussing home accidents, we found that 9 per cent of the accidents in individuals 65 years old and over were due to burns. Similarly, in the public non-transportation deaths, a considerable number lost their lives as a result of burns and explosions. In general, fires are found to be due to defective electrical wiring and equipment, smoking and matches, and to defective heating equipment. A recent newspaper headline, "Spinster, 78, Faints on Stairs, Drops Lamp, Burns to Death," tells its own tragic story.[5] The winter of 1945-1946 brought these problems forcibly to the whole nation.

In four catastrophic fires, 44 elderly people lost their lives and at least 49 others were injured. In December, 1945, 8 were killed in a fire in a home for the aged at Metropolis, Illinois. On December 25, 1945, 17 died and 26 were injured in a fire in a convalescent home at Hartford, Connecticut. The Jennings Hall Home for the Aged at Cleveland, Ohio, burned February 2, 1946. Thirteen died and 12 were injured. On February 10, 1946, fire swept savagely through the Pinehurst Convalescent Home in Suffern, New York, and five elderly women met death, eleven others being seriously injured. In

an editorial comment, the New York Times[6] pointed to the hazard of old buildings, the defects in electric wiring and absence of fire fighting devices as contributing to the high fatality rate among the older people who are handicapped by infirmities in their efforts to escape. Helena Huntington Smith, in a recent popular magazine article, summed up the situation tersely in stating "People aren't fireproof!" She emphasized that so-called fireproof buildings are no protection against fire raging among inflammable furnishings or against panic among the residents.[7]

Lest the reader be led to think that these disasters are the result of neglect due to war shortages, attention is directed to "Fires in Hospitals and Institutions," a publication of the National Fire Protection Association.[8] Here are recorded catastrophes in orphanages, insane asylums and homes for the aged. This is a valuable contribution and should be studied by physicians as well as institutional executives, since it "contains unmistakable evidence of the importance of safeguarding sick, aged and dependent residents of institutional properties against the dangers of fire. Competent administration and adequate medical facilities are essential for the welfare of occupants in institutions, but without adequate fire protection, they may be rendered valueless."

Strict prohibition of smoking in institutions for the aged would seem at first thought highly desirable, but actually would defeat its own purpose by driving the smokers to secluded spots where fire hazards might be greater. Restriction of smoking to specially designated areas is far preferable. The rule of instant dismissal if a resident is found smoking in bed must be enforced without exception.

THE PHYSICIAN'S RESPONSIBILITY

The increasing interest of physicians in the social and medical problems of old age leads directly to the question of prevention. Accidents may often be avoided if the physician appreciates what a great contribution he can make by studying the factors involved, by applying his specialized knowledge in his daily work in private dwellings and in institutions, and by using every means in his power to educate board members, administrators, nurses, relatives and patients.

The first requisite is that physicians must become accident-minded, and always remember that accidents are the fourth most important cause of death at all ages, and that the aged by reason of their infirmities are particularly likely to suffer injury and death from falls and motor vehicle accidents. The forward-looking physician will cooperate with private and governmental agencies in promoting safety campaigns. He will aid in efforts toward safer motoring by setting a good example himself.

In his dealings with his older patients he will endeavor to give them painstaking medical care, and in his examination make every effort to detect ocular, auditory, cardiovascular, musculo-skeletal, neurological and mental abnormalities that may predispose to accidental injury. He will tactfully

warn his aged client of the possibilities of danger, and if conditions warrant, actually forbid certain kinds of activity, such as walking at night or driving a motor car. At times the cooperation of the family will have to be sought in order to avoid serious danger. The education of the family in the matter of accident prevention is the doctor's duty.

Further, the physician must be on the lookout for danger in the patient's home environment. He must warn against small loose rugs, and advise that they be nailed down, and that the same should be done to larger carpet rugs with turned-up edges. He must see that shaky stairs and rickety bannisters are repaired. Unsteady bedside tables should be removed, but above all, an unobstructed pathway must be maintained from the bed to the bathroom, especially at night. The value of a bedside night light has already been pointed out. The bedrooms and living rooms of many old people are often cluttered with furniture with which they hate to part, with the result that one day the leg of an unnecessary table will lead to a fall and a fracture of the neck of the femur.

In hospitals the physician will conduct a continuous educational campaign to apprise nurses of the dangers of accidents, and to teach them how they can help in this good work. He will not hesitate to order side-rails where needed, especially at night for patients who are disturbed or under the influence of drugs. He will also bear in mind the danger of overdosing old people with sedatives. He will remember always the fire hazards, particularly of institutions, and consider himself personally responsible for the removal of potential causes of fire, the installation of proper emergency equipment, and the instruction of personnel on their duties in case of fire. He will spare no energy in reminding boards of directors and administrative heads of their responsibilities to the old people.

In brief, the physician must assume an aggressive attitude toward this whole problem of accidents and accident prevention, speak firmly and decisively when occasion demands, and put into actual practice the lessons of experience. Under his leadership an active program of prevention can be initiated and carried forward to the point where falling accident rates for old people will prove the value of his efforts.

REFERENCES

1. For this introductory material as well as all the tables of statistical analysis used in this paper, the writer is indebted to the 1947 edition of "Accident Facts" published annually by the National Safety Council, Inc., 20 North Wacker Drive, Chicago, Ill., and available at fifty cents per copy. This publication is an outstanding contribution to the welfare of the general public and deserves careful study by physicians each year.
2. Carlson, A. J.: in Geriatric Medicine, ed. E. J. Stieglitz, Chapt. 5, Principal Physiologic Changes with Normal Aging. Phila., W. B. Saunders Co., 1943.
3. Zeman, F. D., Infectious Diseases in Old Age. Clinics, 4: 1157-1184, Feb. 1946.
4. Guarding Against Home Accidents. Statistical Bull., Metropolitan Life Insurance Co. 26: 4-6 Oct. 1945.
5. News item, New York Herald Tribune, Dec. 23, 1945.
6. Editorial, New York Times, Feb. 2, 1946.
7. H. H. Smith, Woman's Home Companion, April 1947.
8. Fires in Hospitals and Institutions, 1945, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.

THE THROMBOSIS-EMBOLISM PROBLEM ASSOCIATED WITH HIP FRACTURES IN THE AGED

Harold F. Bishop, M.D.*

On November 4, 1943, a 76-year-old woman fell and fractured the neck of her left femur. She was hospitalized and treated by traction. Two weeks after the injury she was transferred to an Army hospital. Three days following admission, it was decided to reduce the hip manually and follow by blind nailing with a Smith-Petersen pin. Although the temperature had ranged from 98.6 to 100 (F) and leukocytes numbered 10,500 with 89 per cent polymorphonuclear cells, those findings did not convey any unusual significance. Pulse and respirations were within normal limits.

On November 22, the patient was given premedication of morphine 8 mgs. and scopolamine .3 mgm., followed by inhalation anesthesia and a 5 per cent dextrose venoclysis. After placing the patient on a fracture table, the left hip was manipulated. Laryngospasm and an absence of demonstrable blood pressure followed immediately, although pulse and respirations were not seemingly affected. Following a second manipulation, the pulse was absent at the wrist. Respiration, however, continued. A third manipulation was followed by jerky respirations with a prominent tracheal tug. Respirations became weaker and disappeared about ten minutes following the manipulative procedure. Resuscitation by means of an endotracheal tube, oxygen and stimulants were ineffective, and the patient was pronounced dead about ten to fifteen minutes following operation.

At autopsy, both lower lobes of the lungs were collapsed, firm and dark purple. Fragments of emboli were found in two terminal branches of the left pulmonary artery, completely occluding the lumen. Both iliac veins contained fragments of a thrombus which were loosely attached to the intima of the right femoral vein. Pudendal branches of the iliac veins were bilaterally involved with extensions of the thrombus. This case was reported in the literature as a death due to thrombosis of the iliac veins and pulmonary embolism.[1]

This was sudden death during manipulation of a hip that had been fractured for eighteen days in an elderly patient in whom thrombosis had not been suspected. Since this is a common type of fracture in the aged, and since many of such patients are not manipulated or operated upon for several

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days or weeks following time of injury, it was thought that perhaps other similar types of death might be explained on the basis of thrombosis and embolism. Cannot unsuspected thrombophlebitis frequently develop in association with hip fractures in the aged if they are immobilized in one form or another, and particularly, if operation is delayed? Could not local signs of a developing thrombophlebitis be easily masked by the existence of a fracture with its attendant pain and tenderness? Frequently patients had been anesthetized for manipulation and surgery upon a fractured hip. Many of these had exhibited sudden circulatory changes which were transient and dismissed as reflex in nature. Could not these circulatory alterations be caused by small pulmonary embolizations which did not terminate in death at the time of surgery? It was an interesting speculation, and our attention then became focused upon an attempt to determine how often thrombotic disease might occur in conjunction with hip fracture in the aged.

The occurrence of thrombosis as a secondary sequel to fracture, or other tissue trauma, would be accepted by all as a common complication of this type of injury. The elderly patient who becomes immobilized following a common type of fracture should provide fertile soil for the development and propagation of thrombus formation, particularly if bedrest continues for a period of days or weeks. If a common relationship can be pointed out between hip fracture, thrombosis and the aged, it would be a subject of interest to geriatricians, orthopedic surgeons and anesthetists, who, like myself, may unknowingly be dealing with a condition in which sudden death may occur during the course of anesthesia and surgery.

Four years have elapsed since the occurrence of the fatal case that has been presented. A search for similar cases has been maintained by careful scrutiny of the literature and close questioning of our orthopedic, geriatric and anesthetist friends. Through both sources a total of seventeen similar cases have been collected. Many of these cases cannot be substantiated by complete data. Autopsies have not been performed in some, but at least all of these cases have some similarities to the one described. Therefore they have been included in this series.

A resident in anesthesia was on the service at the time of the death already described. This resident volunteered the information that there had occurred two deaths during hip manipulation in his own hospital in Indianapolis. The clinical records were not furnished by the Indianapolis hospital despite our request for more definite data that might help substantiate the existence or absence of pulmonary embolism.

Taylor[2] in 1942 has reported death from pulmonary embolism in an alcoholic male, 48 years old, during reduction and pinning of a fractured right hip. The leg had been in traction for ten days prior to surgery. There had been no swelling or edema of either leg nor was there any other indication to lead to a suspicion of co-existing thrombophlebitis. General anesthesia was used and a blood pressure could not be obtained following

manipulation. Respiration continued as long as cardiac activity was present. A diagnosis of pulmonary embolism was made before death, which occurred at termination of operation. During attempts at resuscitation it was noted that a state of cyanosis could not be overcome by adequately inflating the lungs with oxygen. Upon autopsy the right femoral vein (fractured side) was found to contain small pieces of blood clot retained by extensions into branches. An embolus (8 cm. in length) had blocked the right branch of the pulmonary artery and occluded the left branch partially. Please note the marked similarities between this case and our own. Taylor[2] cites one other proved case of fatal pulmonary embolus during operation on the leg (under spinal anesthesia) in which the patient died suddenly from a large pulmonary embolus.

In July, 1943, Schenken and Coleman[3] observed and reported upon a case of bone marrow embolism, accompanied by fat embolism, following the operative reduction of the neck of the femur. The patient was 86 years old. An open reduction was performed the day following injury and a low grade fever persisted until her death, four days later. Operation consisted in the insertion of 2 three-inch wooden screws. Four sections of lung tissue showed numerous fat droplets in the capillaries and a mass of bone marrow was present in each of the two branches of the pulmonary artery. Fat droplets were also found in the kidney glomeruli and arterioles. The authors cite one other report from the German literature of bone marrow embolism.[4]

Waters and Gillespie[5] report the death of a 35-year-old obese female during open reduction of a fracture of the neck of the left femur. Under cyclopropane anesthesia, the pulse became irregular and both pulse and blood pressure disappeared. Spontaneous respiration continued for eighteen minutes. At autopsy, histologic studies of the lung showed fat globules in vessels lining the alveoli. It was the pathologist's opinion that the quantity of fat present gave rise to sufficient hypoxia to render the myocardium liable to sudden failure. It is apparent that this patient died from a primary circulatory failure just as did Taylor's patient and our own. The patient was not old but obese.

An orthopedic surgeon in Chicago provided meager details concerning one of his own patients who died during manipulation of a hip. General anesthesia had been administered to this female of 60 years. It was thought that respirations ceased before signs of circulatory failure developed. Necropsy was not performed.

From Washington, D. C., by personal communication with an anesthetist came the report of a similar death in the operating room during manipulation of a hip under general anesthesia. A diagnosis of pulmonary embolism was made although autopsy report was not obtained.

Doud and Rovenstine[6] reported on a case of fatal fat embolism in May, 1946, and refer to fat embolism as the most frequent type of embolism. Their patient was 55 years of age. Hip fracture had existed for three days

prior to open reduction and insertion of an autogenous bone peg. Patient went into profound circulatory collapse after about 30 minutes of general anesthesia and operation, and died shortly thereafter. At necropsy, both branches of the pulmonary artery were occluded with fat. Urine examination disclosed the presence of fat.

Recently an orthopedic surgeon in a nearby hospital made a personal report to us that he had nailed a hip of a private patient who died suddenly 24 hours later while visiting with relatives. A clinical diagnosis of pulmonary embolus was made, although it could not be verified due to lack of autopsy.

Golodner, Morse and Angrist[7] have analyzed the causes of death in a series of 304 patients with hip fractures who were treated in one hospital from 1935 to 1944. Nine of the 86 deaths were due to pulmonary embolizations and this type of pathology topped all other causes in the 25 patients who were autopsied. It was thought by them that many of the patients who were reported as deaths due to bronchopneumonia were possibly the result of minute embolizations with secondary pneumonitis. Three of these patients had been treated by a Smith-Petersen nail. Five of these deaths had been sudden. Clinically the true cause of death had been determined in only one of these nine deaths and this one diagnosis had been entertained because the death was sudden.

The paper, provided by Golodner, Morse and Angrist,[7] covering a rather large series of hip fractures, served to further convince us that the association of thrombosis and embolus with hip fractures was more common than generally suspected or recognized. It can be appreciated why the anesthetists, involved in all of the cases described, are interested in this problem. Practically all of these cases died during some type of general or spinal anesthesia, and if a diagnosis of pulmonary embolus had not been made, the case would have been discarded into that large waste basket known as "anesthetic death."

There are many misconceptions about intravascular thrombosis. Fatal pulmonary embolism is thought to be almost solely the lot of the patient who has had a major surgical operation. Yet as great a proportion of patients, who are sick with medical conditions, die from pulmonary embolism as do those who have had operations.[13] It is thought that venous thrombosis is uncommon, yet studies show that about half of all middle-aged and older patients, who have died after being in bed for varying periods, had thrombosis of the deep veins of the leg.[13]

Barnes[8] has attributed 2 per cent of all deaths to pulmonary embolism and 6 per cent of all post-operative deaths.

Hershey and Apogi[9] report on their results following administration of anesthesia to 173 patients with hip fracture treated by Smith-Petersen nailing. All patients were over 60 years of age. Eleven (or 6.3 per cent)

died in this group. No mention is made of thrombosis or embolism, although death was ascribed to pneumonia in four instances.

Ochsner and DeBakey[10] have pointed out the significance of thrombophlebitis and phlebothrombosis to the orthopedic surgeon. They have found that patients with arthritis, as well as elderly patients with hip fracture, are particularly likely to develop thrombophlebitis with immediate potential danger to the life of the patient and to subsequent morbidity.

In 1929, Miller and Rogers[11] presented a group of 76 cases with post-operative pulmonary embolism and phlebitis. Out of these, seven followed operations for fracture. From the evidence given by them, it was apparent that, whereas pulmonary embolism followed more frequently after abdominal operations, it did occur significantly following extremity surgery.

A statistical study on the occurrence of post-operative venous thrombosis and pulmonary embolism at the Mayo Clinic has been published by Barker, Nygaard, Walters and Priestley.[12] Thrombo-embolic disease occurred five times following open reduction of fractures (in 721 operations, or .69 per cent) and seventeen times following all operations upon extremities (in 12,641 operations, or .13 per cent).

During 351 routine autopsies, Hunter, Krygier, Kennedy and Sneeden,[13, 14] removed and dissected calf muscles. They found that thrombosis of the deep veins of the leg is appallingly frequent among middle-aged and older patients forced to bed for varying periods of time. The incidence of thrombosis was 52.7 per cent. They were of the opinion that the greatest single factor favoring thrombus formation in the lower extremity is sudden confinement to bed of a previously ambulatory older person without the benefit of exercise or the aid of gravity in the maintenance of an efficient venous circulation. Active exercise, they feel, is the best means of prevention in those patients in whom thrombosis is suspected.

Dock[15] and his associates have emphasized not only the frequency of pulmonary embolism, originating from leg and pelvic veins of bedridden persons, but other serious effects of confinement as well. His indictment of the abuse of bedrest is a scathing one.

McCartney[16] feels that embolism is perhaps more frequent in persons who have been confined to bed for other reasons than an operation, as after delivery, a fracture, particularly of a lower extremity, and in many diseases associated with an impaired circulation. In 25,771 necropsies at the University of Minnesota, he found that operations on the extremities were the second largest contributor to the actual number of instances of thrombo-embolism, yet they ranked in eighth place in the number of fatal embolisms.

Fine and Starr[17] state that no adult who is confined to bed for any reason, whether medical or surgical, may be regarded immune to the complication of thrombo-embolism. While it is commoner in elderly patients, for example, with prostatic disease, in people with varicose veins, elderly patients with coronary disease, and after low thigh amputation, there is no guide

which permits relaxation from close observation for presence of phlebitis if fatal embolism is to be avoided.

Veal[18] believes that pulmonary complications are more frequent following thigh amputations than in any other field of surgery and that many of the pulmonary lesions are embolic in origin. He and Hussey[19] encountered 12 cases of deep venous thrombosis of the leg following disease or injury to the lower extremity out of a series of 84 patients.

Roessle[20], Neumann[21] and Frykholm[22] have all published the results of extensive series of pathologico-anatomical investigations in which there was fully demonstrated the dominant role played by four areas of origin of venous thrombosis: (a) the plantar veins, (b) the veins of the muscles of the calf, (c) branches of the deep femoral vein in the adductor muscles, and (d) the visceral pelvic veins. Frykholm[22] believes that injury to the intima of the vein is the most important factor in the pathogenesis of thrombosis and further points out that, as a rule, a patient remains free from thrombi if it is possible to allow him up a few days following operation.

A small group of patients with fracture of the hip region requiring operative procedures has been subjected to prophylactic femoral vein interruption in a series conducted by Allen, Linton and Donaldson[23]. They advocate this procedure prior to surgery due to their recognition of the frequency of fatal embolus in aged patients, particularly in those with intertrochanteric fractures. Elderly men requiring prostatectomy and other serious operations for malignant diseases are beginning to be considered by them in the same light. Femoral vein ligation has not been responsible for a single death in their hands.

Recently (May, 1947), Morton, Mahoney and Mider[24] have reviewed their experiences with pulmonary embolism and intravascular venous thrombosis. They state that this complication is more common in surgical patients over 50 years of age and that 8 per cent of all postoperative pulmonary embolism occurs in the first two weeks. They found that patients suffering from severe traumatic injuries have an average number of embolic episodes, but it was significant that almost all of the fatal pulmonary emboli were found in old ladies with fractured hips.

Lam and Hooker[25] have reviewed the incidence of postoperative pulmonary embolism at the Henry Ford Hospital following 118,000 operations over a 21-year period. There were 39 embolisms following 5,199 operations on fractures and this group of operations carried a higher incidence of fatal embolisms (23 per cent) than following any other type of surgery. Five of their fatal embolisms since 1939, in that hospital, have followed fracture of the neck of the femur, with or without nailing. This is mentioned because no other type of injury or operation carried a higher incidence of fatal embolisms in that hospital between 1939 and 1944. They found fatal embolism occurred most often on the sixth and eleventh postoperative days. This would correspond to the time of getting patients up to go home after opera-

tion at the end of one or two weeks. Early ambulation, as advised by Leithauser[26] and others, should change these periods of most frequent occurrence. Leithauser has been one of the leading advocates of early postoperative ambulation as a means of preventing circulatory and pulmonary complications.

Chapman and Linton[27] have made an interesting observation which may account for so-called "bed-pan deaths" or deaths occurring following acts of defecation, parturition, coition, lifting or straining at work. They believe that sudden and often fatal pulmonary embolism is a common result of such acts of straining by those confined to bed due to illness or operation. When sitting in the bed-pan position, particularly during forced expiratory effort with the glottis closed, there is a great rise in normal venous pressure in the legs. This increased venous pressure may be sufficient to loosen an insecurely attached mural thrombus. As the drop in venous pressure occurs during the next inspiration, dammed-up venous blood rapidly empties from the peripheral veins, washing with it any loosely attached thrombi.

Meyerding and Pollock,[28] in a discussion of treatment of acute fractures of the neck of the femur, stated in 1939 that they favor waiting until a week has elapsed following fracture before surgical intervention is undertaken. Despite this opinion, there is probably an increasing attitude among orthopedic surgeons to operate as soon as possible following fracture in order to prevent the development of venous thrombosis.

The subject of fat embolism is an entity in itself. Six hundred known references to fat embolism are in the literature. Gaus[29] brings out the point that fat embolism is more common in fractures than in other conditions because the veins are encased in a bony wall and remain open for the admittance of the fatty mixture. Scuderi[30] states that there is apparently no clinical correspondence between apparent injury and the degree of resulting lipemia. The onset usually does not become manifest until the third or fourth day following injury. Grondahl[29] has stated that death attributed to fat embolism in fracture cases occurs in only 1 per cent.

There exists much confusion regarding the importance of fat embolism as a clinical entity. Evidence indicates that fat emboli occur frequently in association with trauma to bone. Some fat is probably embolized with most if not all fractures.

Bisgard and Baker[31] have concluded that ether anesthesia has little or no beneficial influence upon embolization of fat. They feel that fat in the sputum and in pulmonary capillaries is not pathognomonic of fat embolism but may arise from liquid fat in the soft tissues transported to the lungs in phagocytes.

CONCLUSION

The author has collected and presented a group of 17 patients who died from pulmonary embolism during or shortly following operative procedures

upon fractured femurs in elderly patients. Autopsies substantiated this diagnosis in 14 of this series. The embolus was fat in three instances. Death was sudden and occurred during operation (without fore-warning) in 11 of the 17. The ages of the patients in this series ranged from 35 to 86.

An attempt has been made to point out that a relation exists between the elderly patient confined to bed with a hip fracture and thrombo-embolic disease and that the longer operative treatment is delayed following injury, the greater will be the possibility for thrombosis to develop in the fractured extremity. In those patients in whom a long interval of days has elapsed between injury and day of surgery, the threat of embolism arising from a masked thrombosis must be appreciated. If the fracture is old, preventative measures should be instituted prior to surgery. These might include the use of anticoagulants, venous ligation or mobilization of the patient.

A plea for early ambulation in all elderly patients suffering from hip fracture or other injury is stressed by references to the literature which have dwelt upon this point. Bed rest should be considered unphysiologic insofar as it applies to the management of hip fractures in the aged.

REFERENCES

1. Miller, S., and Bishop, H. F.: Fatal Pulmonary Embolism during Manipulation of Hip under Anesthesia, Anesthesiology, Vol. 5, No. 3, pp. 300-303, (May) 1944.
2. Taylor, J. B.: Fatal Pulmonary Embolism Occurring during Operation, Anesthesiology, Vol. 3, No. 6, pp. 689-691, (Nov.) 1942.
3. Schenken, J. R., and Coleman, F. C.: Bone Marrow and Fat Embolism following Fracture of the Femur, Am. J. Surg., Vol. 61, No. 1, pp. 126-127, (July) 1943.
4. Henke, F., and Labarsch, O.: Eds. Handbuch der speziellen pathologischen Anatomie and Histologie, Vol. 3, Part 3, pp. 104-107, Berlin, 1931, Springer.
5. Waters, R. M., and Gillespie, N. A.: Deaths in the Operating Room, Anesthesiology, Vol. 5, No. 2, pp. 113-128, (Mar.) 1944.
6. Doud, E. A., and Rovenstine, E. A.: Fatal Fat Embolism: A Case Report, Anesthesiology, Vol. 7, No. 3, pp. 291-295, (May) 1946.
7. Golodoner, H., Morse, L. J., Angrist, A.: Pulmonary Embolism in Fractures of the Hip, Surgery, Vol. 18, No. 4, pp. 418-423, (Oct.) 1945.
8. Barnes, A. R.: Pulmonary Embolism, J.A.M.A., 109:1347, 1937.
9. Hersey, S. G., and Apogi, E.: The Anesthetic Management of Aged Patients with Fractured Neck of the Femur, New York State J. Med., Vol. 44, No. 2, pp. 183-188, (Jan. 15) 1944.
10. Ochsner, A., and DeBakey, M.: The Significance of Phlebothrombosis and Thrombophlebitis in Orthopedic Surgery, Vol. 23, No. 4, pp. 788-794, (Oct.) 1941.
11. Miller, R. H., and Rogers, H.: Postoperative Embolism and Phlebitis, J.A.M.A., Vol. 93, No. 19, pp. 1452-1456, (Nov. 9) 1929.
12. Barker, N. W., Nygaard, K. K., Walters, W., and Priestley, J. T.: A Statistical Study of Postoperative Venous Thrombosis and Pulmonary Embolism, Proc. Staff Meet., Mayo Clin., Vol. 15, No. 49, pp. 769-773, (Dec. 4) 1940, Vol. 16, No. 1, pp. 1-5, (Jan. 2) 1941, Vol. 16, No. 2, pp. 17-21, (Jan. 8) 1941, Vol. 16, No. 3, pp. 33-37, (Jan. 15) 1941.
13. Hunter, W. C., Krygier, J. J., Kennedy, J. C., Sneeden, V. D.: Etiology and Prevention of Thrombosis of the Deep Leg Veins, Surgery, Vol. 17, No. 2, pp. 178-190, (Feb.) 1945.
14. Hunter, W. C., Sneeden, V. D., Robertson, T. D., and Snyder, G. A. C.: Thrombosis of the Deep Veins of the Leg, Arch. Int. Med., Vol. 68, No. 1, pp. 1-17, (July) 1941.
15. Dock, W.: The Use and Abuse of Bed Rest, Conference on Therapy, New York Hospital, New York State J. Med., Vol. 44, pp. 724-730, 1944.
16. McCartney, J. S.: Postoperative Pulmonary Embolism, Surgery, Vol. 17, No. 2, pp. 191-206, (Feb.) 1945.

17. FINE, J., and STARR, A.: The Surgical Therapy of Thrombosis of the Deep Veins of the Lower Extremities, Surgery, Vol. 17, No. 2, pp. 232-239, (Feb.) 1945.
18. VEAL, J. R.: The Prevention of Pulmonary Complications following Thigh Amputations, J. A. M. A., Vol. 121, No. 4, pp. 240-244, (Jan. 23) 1943.
19. VEAL, J. R., and HUSSEY, H. H.: Surgery of Deep Venous Thrombosis of the Lower Extremity, Surgery, Vol. 17, No. 2, pp. 218-231, (Feb.) 1945.
20. ROESSLE: Die Besonderheiten der Sterblichkeit in Basel., Sitzungsb. Naturforsch. Ges., 1929, p. 40.
21. NEUMANN: Ursprungszentren und Entwickelungsformen der Bein-Thrombosen, Arch. f. path, Anat., 1938, 301:708.
22. FRYKHOLM, R.: The Pathogenesis and Mechanical Prophylaxis of Venous Thrombosis, Surg., Gynec., & Obst., Vol. 71, No. 3, pp. 307-312, (Sept.) 1940.
23. ALLEN, A. W., LINTON, R. R., and DONALDSON, G. A.: Venous Thrombosis and Pulmonary Embolism, J.A.M.A., Vol. 126, No. 6, pp. 397-403, (June 9) 1945.
24. MORTON, J. J., MAHONEY, E. B., and MIDER, G. B.: An Evaluation of Pulmonary Embolism following Intravascular Venous Thrombosis, Ann. Surg., Vol. 125, No. 5, pp. 590-603, (May) 1947.
25. LAM, C. R., and HOOKER, D. H.: Pulmonary Embolism, Ann. Surg., Vol. 123, No. 2, pp. 221-228, (Feb.) 1946.
26. LEITHAUSER, D. J.: Confinement to Bed for only Twenty-four Hours after Operation, Arch. Surg., Vol. 47, No. 2, pp. 203-215, (Aug.) 1943.
27. CHAPMAN, E. M., and LINTON, R. R.: Mode of Production of Pulmonary Emboli, J. A. M. A., Vol. 129, No. 3, pp. 196-197, (Sept. 15) 1945.
28. MEYERDING, H. W., and POLLOCK, G. A.: Acute Fractures of the Femur, Am. J. Surg., Vol. 46, No. 2, pp. 292-299, (Nov.) 1939.
29. GAUS, H.: Arch. Int. Med. 18:76, 1916.
30. SCUDERI, C. S.: Fat Embolism, Surg., Gynec. & Obst., Vol. 72, No. 4, pp. 732-746, (Apr.) 1941.
31. BISGARD, J. D., and BAKER, C.: Experimental Fat Embolism, Am. J. Surg., Vol. 47, No. 2, pp. 466-478, (Feb.) 1940.

DISEASES OF OLD AGE LESS PREVALENT IN TROPICS

If one would live long, he should spend his early years in a temperate climate to avoid the infections of the tropics, and the later years in the tropics to avoid the degenerative diseases of the temperate zone.

This is the advice given the National Safety Council by Dr. Carroll L. Birch, associate professor of medicine at the University of Illinois. He predicted that when once infectious diseases are conquered, tropical lands probably will become the site of the most advanced civilization the world has ever known.

He pointed out that the degenerative diseases so common in the temperate zones are practically non-existent in tropical areas. Infections are the main health hazards in hot countries, and these primarily affect the young.

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FURTHER STUDIES ON ELECTRO-CARDIOGRAPHIC CHANGES IN OLD AGE*

Theodore T. Fox, M.D., John C. Weaver, M.D.,
Richard L. Francis, M.D.

SEVERAL years ago an electrocardiographic study of a homogenous section of the population of New York was published in an attempt to define what constitutes a normal electrocardiogram in the aged and what significance could be attached to the abnormal tracing.[1] It was then realized that the conclusions drawn need further support from serial studies of large groups from various sources. It is for this reason that we now present a similar study of another section of the population with constituents quite different from those previously reported.

MATERIAL AND RESULTS

Three hundred male inmates of the Farm Colony of the City of New York were subjected to clinical, fluoroscopic and electrocardiographic examinations. They were all ambulatory. It was a mixed group of people, characteristic, but not proportionately representative of the population of the City of New York. The information on the charts as to the origin of the inmates yielded the following results: American white—100; American negro—3; British—30; Scandinavian—40; Slavic—30; German—23; French—1; Greek—1; Hebrew—6; No information—66.

The physical load of the group studied was naturally limited. Some worked in the garden or in the yard, some held part-time jobs as porters in an adjacent hospital (Sea-View), most of them "just sat around." A certain number had to walk up two flights to their bedrooms. A very small number presented demonstrable signs of circulatory insufficiency. Those were in the group of auricular fibrillation with rapid ventricular rates. The age distribution is indicated in Table 1. There were 123 inmates in the seventh decade, 116 in the sixth, 53 in the eighth decade and only 8 inmates were

TABLE 1
ELECTROCARDIOGRAM IN RELATION TO AGE

Age	Normal	Electrocardiogram	Abnormal	Electrocardiogram	Total
60-69	68	58.6%	48	41.4%	116
70-79	59	48.4%	64	51.6%	123
80-89	24	45.3%	29	54.7%	53
90 Plus	1	12.5%	7	87.5%	8
Total	152	50.6%	148	49.4%	300

*From the Department of Cardiology, Sea-View Hospital, and the New York City Farm Colony, Staten Island, New York.

TABLE 2
DISTRIBUTION OF TENSION AND HEART ENLARGEMENT IN RELATION TO AGE

Age	Non-Hypertensives		Systolic Hypertensives		Diastolic Hypertensives		Total	Total Hypertensives		Total Enlarged Heart	
	E.H.	No E.H.	E.H.	No E.H.	E.H.	No E.H.					
60-69	16	28	16	26	19	11	116	72	62%	51	43.9%
70-79	20	23	36	21	15	8	123	80	65%	71	57.1%
80-89	15	12	11	7	5	3	53	26	49%	31	58.4%
90 Plus	1	1	1	2	2	1	8	6	75%	4	50.0%
	52	64	64	56	41	23	300	184	61%	157	52%
Total	116 (38.7%)		120 (40.0%)		64 (21.3%)						

90 years and older. A great many inmates had emphysema. There were a considerable number with kyphosis, and some had kyphoscoliosis. Parkinsonian syndrome was quite frequently observed. A small number had residual evidences of hemiplegia. Incidental findings on fluoroscopic examination were two cases with lung tumors, one case of pleural effusion and several cases with pleural adhesions and pulmonary fibrosis. The state of nutrition was rather *poor* in the majority of cases.

Fluoroscopy. 153 of the inmates had dilated, elongated, tortuous or dense aortas. There were two cases with moderately large silent aortic aneurisms. They were both white. One was 70 years old and one 60. Both cases had a positive serology. The heart was normal in size in 142 cases; 144 cases had one plus or two plus enlargement, the enlargement being confined to the left ventricle. Marked enlargement was noted in 14 cases. They were in the group of diastolic hypertension. When marked enlargement was noted, all chambers were involved. Emphysema was present in 42 cases, and kyphoscoliosis in 7 cases, *without* evidences of right heart involvement. Twenty cases showed pulmonary fibrosis. Twenty-five cases had considerable elevation of the left diaphragm.

Tension. There were 116 cases (38.6 per cent) with a normal blood pressure: less than 140 mm Hg-systolic, and less than 90 mm-diastolic, 121 cases (40.3 per cent) had a systolic hypertension, the diastolic being 90 or less mm Hg. 63 cases (21.1 per cent) had a diastolic level of more than 90-diastolic group. The average systolic pressure in the systolic group was 161.9. The average systolic pressure in the diastolic group was 180. In the diastolic group, 21 inmates had a systolic pressure of 200 mm, 2 cases had a systolic pressure of less than 140; 9 cases in this group had a diastolic level of over 120.

Stethacoustics. Well defined systolic murmurs at the apex were heard in 66 cases. In 42 of this group the heart was enlarged, in 21 dilatation of the aorta was observed. Systolic murmurs at both apex and base were heard

TABLE 3
TYPE OF ELECTROCARDIOGRAPHIC ABNORMALITIES

	No. of Cases	Per Cent
Sinus Arrhythmia	11	
Auricular Fibrillation	13	4.3
Premature Auricular Contractions	16	
Premature Ventricular Contractions	24	
Premature Auricular and Premature Ventricular Contractions	1	
Premature Nodal Contractions	1	
Total Premature Contractions	42	14
Auricular Tachycardia	1	
1st Degree A-V Block	14	5
Complete A-V Block	1	
Prolonged I-V Conduction	26	8.7
T-1 Changes	9	
T-2 Changes	8	
T-4 Changes	14	
T-1-2-3 Changes	4	
T-2-3 Changes	3	
Total T Changes	39	13
P Changes	14	4
RST Changes	38	12.7
QRS 1-2-3 Slurred	5	
QRS 4 Downward	2	
QRS 1-2-3 Downward	1	
Absent or Short R-4	1	
Sinus Block	1	
Q-1 Present	1	
Q-2 Present	3	
Low Voltage	6	2
High Voltage	8	
L. A. D.	145	
R. A. D.	3	1
Q-2-3	....	....

in 30 cases. Of these, 29 had dilated aortas, and only 14 showed heart enlargement; 9 cases presented systolic murmurs at the base only. Of these, 7 had dilated aortas, and only one had an enlarged heart. It would seem, therefore, that systolic murmurs at the apex are associated with heart enlargement, and systolic murmurs at the base with dilated aortas. A diastolic murmur at the apex was audible only once. The man was 65 years old, his blood pressure was 180/100, his heart was enlarged but the aorta was normal in width. A systolic and diastolic murmur was heard at the apex five times. The heart was enlarged in all of them, the aorta dilated in 4. Their ages and blood pressure readings were as follows:

AGE	BLOOD PRESSURE
71	150/70
79	140/90
82	150/70
83	240/120
94	200/12. (Funnel chest)

Double murmurs at the apex and base were heard in two cases; both had enlarged hearts and dilated aortas. They were 70 and 94 years old

TABLE 4
THE RELATIONSHIP OF HEART SIZE TO TYPE OF ELECTROCARDIOGRAM

Age	——Heart Enlargement——		——No Heart Enlargement——		Total
	Norm. E.C.G.	Abnorm. E.C.G.	Norm. E.C.G.	Abnorm. E.C.G.	
60-69	21	30	46	19	116
70-79	25	46	34	18	123
80-89	13	18	11	11	53
90 Plus	0	4	1	3	8
Total	59 (38%)	98 (62%)	92 (64%)	51 (36%)	300

and their respective blood pressure readings were 150/50 and 110/70. There was no history of rheumatic fever in any of the cases with murmurs.

Electrocardiogram. All tracings were obtained in the sitting position. The only chest lead recorded was CF4. A tracing was called normal when it was structurally normal. No allowances were made for age. Those with premature contractions were considered abnormal tracings. Of the 300 tracings recorded, 152 were normal, and 148 abnormal (Table 1). The types of abnormalities observed are listed in Table 3. Auricular fibrillation was present in 4.3 per cent of the cases, premature contractions in 14 per cent. Fourteen out of a total of 40 cases with premature contractions had other abnormalities in the tracing. A-V block was recorded in 5 per cent and I-V conduction impairment in 8.7 per cent of the cases. Abnormal RST segments were noted in 12.7 per cent of the cases, T-wave changes in 12.7 per cent. There were only eight tracings showing high voltage in the group of 145 cases with left axis deviation. Low voltage was noted in six cases (2 per cent). Right axis deviation was rare (1 per cent).

As seen in Table 1, the incidence of abnormal electrocardiogram increases with age. Table 4 shows the relationship of heart size to type of electrocardiogram. In the group of cases with heart enlargement 62 per cent presented abnormal electrocardiograms. About the same number of normal tracings were recorded in the group with no enlargement of the heart. All but one of the 14 cases with markedly enlarged hearts had abnormal electrocardiograms. These included six cases of auricular fibrillation, five cases of I-V block, one with premature ventricular contractions and one with an isoelectric T-2. Table 5 presents the relationship of the electrocardiogram to the level of tension.

It seems that there are about the same number of hypertensive individuals in the group with normal tracings as there are with abnormal ones. Closer observation, however, reveals the fact that the hypertensives in the normal group belong to the systolic variety, thus indicating that systolic hypertension is not a component in the causation of the abnormal tracing. The level of systolic pressure, no matter how high, is not a factor in the causation of an abnormal tracing as long as the diastolic blood pressure is 90

TABLE 5
TYPE OF ELECTROCARDIOGRAM AND TENSION

NORMAL ELECTROCARDIOGRAM			ABNORMAL ELECTROCARDIOGRAM		
Hypertension		Normal Tension	Hypertension		Normal Tension
Syst.	Diast.		Syst.	Diast.	
72	23	57	50	39	59
63%			60%		

or below. The higher average systolic pressure found in the diastolic group, therefore, may be excluded. The level of the diastolic blood pressure mainly accounts for the abnormal electrocardiogram.

The distribution of tension and heart enlargement in relation to age is indicated in Table 2. Of significance is the fact that in the diastolic hypertensive group heart enlargement is predominant in all decades. Systolic hypertension has a slight influence, also, on heart enlargement in the older age group. The incidence of conduction difficulties apparently increases with age (Table 6). Intraventricular conduction impairment is more common than A-V block. T-wave change in this series does not seem to be materially dependent on the age factor (Table 7). The highest incidence was noted in the eighth decade.

Mortality Rate in Relation to the Electrocardiogram. Of the 300 cases studied, five died within nine months from the time that the electrocardiograms were recorded. Three of these belonged to the eighth decade. Of the three inmates, two had abnormal tracings. The fourth inmate was 68 years old and his electrocardiogram was normal. The fifth was 70 years old. His original tracing showed left axis deviation and was normal otherwise. Nine

TABLE 6
INCIDENCE OF CONDUCTION DIFFICULTIES

Age	Total Number	A-V	Percentage	I-V	Percentage
60-69	116	2	1.7	6	5.17
70-79	123	6	4.9	12	9.7
80-89	53	4	7.5	5	9.4
90 Plus	8	3	37.5	3	37.5
Total	300	15	5	26	8.6

TABLE 7
T CHANGES IN RELATION TO AGE

Age	Total Number of Cases	T Changes	Percentage
60-69	116	13	11.2
70-79	123	17	13.8
80-89	53	8	14.5
90 Plus	8	1	12.5
Total	300	39	13.0

months later, shortly after climbing a flight of stairs, he complained of substernal oppression. An electrocardiogram obtained while he was in pain showed a depressed RST segment in leads 1 and 2 and CF-4. Six days later his tracing reverted to normal. He suddenly died on the following day. This case illustrates the transient electrocardiographic changes occurring in angina pectoris.[2]

COMMENT

The abnormal electrocardiogram seems to be a manifestation of diastolic hypertension, heart enlargement and age. Essentially similar conclusions were drawn from a study of a different block of population already referred to. Quantitively, there were differences. In evaluating these differences the following considerations might be of significance. In the study referred to, females were slightly predominant. Diastolic tension among females is more common than in males. This report comprises a male population exclusively. The number of diastolic hypertensives in the previous study was 44.4 per cent of the entire population, against 21.3 per cent in this group, while non-hypertensives predominated in this group (38.7 per cent against 23.3 per cent). The systolic group in this study was larger than in the previous one (40 per cent against 32.3 per cent) which bears out the contention that systolic hypertension is not a causative factor of the abnormal tracing.

The age distribution differed in the two studies. There were only 44 inmates in the sixth decade in the previous report against 116 in the present group. The eighth decade in the previous study included 83 inmates against 53 in this report. This consideration is in favor of the contention that age plays an important role in the causation of the abnormal electrocardiogram. Associated conditions may be of importance, as for instance, diabetes. This metabolic disease was not infrequent in the Hebrew group previously reported. There were no diabetics in this group. Another factor seemed rather prominent—the state of the inmates nutrition. Moderate obesity was present in a fair number of the group previously reported, while most of the inmates examined for this report were rather thin.

The individual abnormalities showed considerable differences in incidence. The total of RST changes in this group was 38, against 63 in the previous report; the total of T changes 39, against 101 in the previous group. Prolonged A-V conduction in the previous group was present in 13.3 per cent, prolonged I-V conduction in 13 per cent of the cases. The incidence in the present group is much smaller. The incidence of auricular fibrillation and premature contractions is about the same in both groups. The mortality rate in this series was rather small, 1.7 per cent in nine months against 10 per cent in the previous group in six months. There may be several reasons for this phenomenon. An important factor is the age distribution in the two groups, already commented on. The early administration of antibiotics in minor and major infections is probably another significant factor. Two of the five inmates who died within nine months from the time their electro-

cardiograms were recorded had abnormal tracings. Naturally in such a small group no conclusions can be drawn as to the relationship of the mortality to the electrocardiogram.

CONCLUSION

The abnormal electrocardiogram in senescence is a function of age, diastolic hypertension and heart enlargement. Contributory factors are associated diseases or conditions, e.g. diabetes. It is also possible that the state of nutrition of the individual plays a role—the thin person having a greater chance to have a normal electrocardiogram for a longer period of time.

It is apparent from the comparative analysis of the results obtained in the previous paper on the subject and those of the present report, that further studies of large blocks of population are necessary before definite conclusions can be drawn.

REFERENCES

1. Fox, T. T., Klements, J., and Mandel, E. E. Electrocardiographic changes in old age. Ann. Int. Med., 17, 236-246, 1942.
2. Rothendler, H., Comparative electrocardiographic changes in angina pectoris and coronary thrombosis in the same patient. Ann. Int. Med., 23, 268-270, 1945.

UNIVERSITY SCIENTISTS STUDY PHYSIOLOGICAL FACTORS IN AGING PROCESS

A group of some 300 St. Paul and Minneapolis men between the ages of 45 and 54 will serve as volunteer "human guinea pigs" at the University of Minnesota in a 10-year study of factors which influence the development of hardening of the arteries and high blood pressure.

Seven medical scientists, working in the laboratory of physiological hygiene in Memorial Stadium under the direction of Dr. Ancel Keys, world famous physiologist, want to know whether there are habits of diet and physical activity which will prevent or delay the development of the degenerative diseases of the heart and blood vessels. Special attention also will be focused in the study on the effects of worry and tension.

Men who participate in the study will undergo a free thorough examination of the condition of their hearts and blood vessels once each year for five consecutive years in the University laboratory, Dr. Keys explained. The investigators then will keep a check on the physical condition of these men for the following five years. The examinations started in January, 1948.

Forming a special group among the 300 "human guinea pigs" will be about 30 men who have been following a systematic program of exercise over a considerable period. From a special study of this select group over the period of the project, Dr. Keys expects that information will be obtained on whether systematic exercise after the age of 40 has any beneficial or harmful effects on the heart and blood vessels and whether such activity retards or hastens the development of the degenerative heart ailments.

THE EVOLUTION OF A GERIATRIC UNIT

Marjory W. Warren, M.D.

During the present century, as a result of greatly improved welfare of almost all sections of the community, the tremendous expansion of preventive medicine and research work in the realms of therapy, there has been a marked age shift in the population of Great Britain.

The following tables fully endorse this statement.

TABLE 1. GREAT BRITAIN—NUMBER AGED 60 OR OVER

Year	Men	Women	Total
1901	1,071,519	1,336,907	2,408,426
1939	2,511,200	3,197,400	5,708,600
1944	2,737,000	3,590,000	6,327,000
1946	2,828,000	3,759,000	6,587,000

TABLE 2. GREAT BRITAIN—TOTAL POPULATION

Year	Total
1901	37,000,000
1944	47,628,000

TABLE 3. GREAT BRITAIN—EXPECTATION OF LIFE

Year	Men	Women
1891–1900	44.1 years	47.8 years
1901–1910	48.5 years	52.4 years
1942	61.7 years	67.4 years

In addition to these facts are two other conditions which have seriously added to the problem of the overall care of the elderly sick, namely: the enormous loss of houses from aerial destruction during the World War II and the retardation of the building programme brought about by the war, and the post war economy; the diminishing tendency for the elderly to be cared for by their own family. This latter reason would form subject matter for an article on its own. Suffice it here to point out that various factors contribute to the condition, such as, the smaller size of the family, the frequent scattering of the members of the family to widely separated parts of Great Britain, or even overseas, and to the present day weakening of the sense of filial responsibility.

The fascination of Medicine lies in its basic qualities—its wide social and humanitarian aspects, its progressive nature and its variety. Of all branches of Medicine, that of treatment of the chronic elderly sick has received, so far, less attention than others and consequently offers the widest scope for pioneer work and research. With the ageing of the population of Great Britain this subject has become not only one of academic interest, but one calling for urgent reform and practical solution.

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Although the term "geriatric," first used by Nascher in 1909 in America, has not yet been generally accepted in medical circles in Great Britain, there is a good deal to recommend its use. The word has the merit of defining patients in the upper age groups and separating them from the so-called "chronic" patients of the younger groups. At the present time, the majority of the elderly sick are referred to as "chronic" because the maladies and multiplicity of diseases from which they suffer call for treatment of long duration and almost always leave residual disabilities.

Of recent years, there has been a gradual awakening to the general inadequacy of treatment meted out to the majority of elderly sick and many sections of the community realise the urgent need for a much better service both for medical treatment and social care.

From the figures quoted previously and our knowledge that the morbidity rate rises with increasing age there can be no doubt that in the future provision must be made for much larger numbers of elderly sick than has been necessary in the past, and this provision must, moreover, be varied and suitable for all types. With a changed economic outlook, it must be presumed that many more classes of persons, whether sick for short or long term conditions, will need hospital accommodation. In the immediate future, if indeed ever, there is no likelihood that nursing and domestic personnel will be available for individual hire as in the past. Even if such help is obtainable, the greatly increased rates of pay, especially of domestic workers, will certainly make it impossible for the elderly and sick professional and middle class persons, on a small fixed pension, to remain cared for in their own homes. This side of the problem is manifest today, for already there are many such persons who have not the means to obtain the help that is essential and who find it almost impossible to gain admission to hospitals or institutions providing beds for long term illness of elderly sick. We also see pathetic cases of the well-to-do with ample means and large homes, yet who are unable to obtain the help that they need and are living in considerable discomfort and great loneliness.

All this at first suggests the need for a much larger number of hospital beds at a time when building is difficult, and the shortage of nurses acute. There are, however, one or two other factors which should be considered before plans are drawn up. Firstly, the treatment of many of the acute conditions amongst younger patients is shortened by modern therapy, such as sulpha drugs and penicillin, to mention but two, and so the turnover of such conditions should be possible in fewer beds, thus releasing some for the long stay cases. Some preventable diseases may never need hospitalization at all. Secondly, and this is not yet sufficiently widely appreciated, much can be done to rehabilitate elderly patients so that a considerable number may be discharged from the hospital. Some could return to their own homes and those unfit to return home could enter a small residential home, thus retain-

ing a modicum of liberty and using much less costly accommodation than would be provided in a hospital bed with full equipment and nursing staff.

In this connection it should be remembered that a number of the most crippling conditions from which the long-term chronic sick suffer are preventable. Many more conditions may be found preventable or treatable when more time and research has been devoted to such cases.

THE EVOLUTION OF THE GERIATRIC UNIT

During the past twenty years certain changes in administration affecting the treatment and care of large numbers of the long-term elderly sick patients have appeared. In 1929 large numbers of sick persons in hospitals, previously administered by Boards of Guardians, became the responsibility of the respective County Councils with their County Medical Officers. Later, certain additional institutions for the chronic sick and infirm, previously the responsibility of Public Assistance under the Poor Law, were appropriated by Public Health. In July 1935, one of these Poor Law Institutions, carrying about 700 chronic sick and infirm persons, became by change in legislation part of the general Public Health Hospital, which had itself been taken over by the County Council from the local Board of Guardians in 1929.

This change in responsibility called for immediate reform in order to raise the standard of the care and treatment of persons in the Institution to that of the Public Health hospital of which it had now become a part.

As there must still be many such institutions both in Great Britain and in other countries carrying large aggregate numbers of chronic sick and infirm persons, it is thought that it may be of interest to study the development and growth of one which has built up a Geriatric Unit from some of these wards, and to discuss the functions and future rôle of such a unit in the general hospital. It is the account of this pioneer unit still in the making which is the subject of this article.

CAUSES OF FAILURE IN THE PAST

There can be little doubt that in the past failure to obtain good results for the elderly sick and infirm, has been brought about by too little attention from medical and nursing staffs. It may be profitable here to consider the reasons for these failures.

1. Lack of continuity in the care of the elderly sick brought about mainly by lack of medical interest and consequent early transfer of the long stay patient away from senior medical staff to the hospital for "chronic" patients.
2. Failure to investigate and treat fully by modern methods all patients with whatever condition and of whatever age.
3. Failure to provide first class equipment for the chronic elderly sick comparable to that used for the younger acute patients.
4. Lack of appreciation on the part of medical persons as to how much can be done to rehabilitate and resettle elderly sick patients.

With these points in mind, and before any plans were made as to the ultimate development of a Geriatric Unit, every patient (about 700 in all) was fully examined, medically assessed and, where necessary, given appropriate treatment. In the majority of cases, relatives and friends were interviewed concerning the future. Almost immediately about 200 relatively able-bodied elderly persons were transferred to a Residential Home for old people close to the Hospital and run by Public Assistants, thus freeing accommodations for acute medical patients. Approximately 150 patients attached to the mental observation wards were left in the care of the psychiatric staff. This left about 350 really chronic sick patients to be cared for and treated.

The survey took in all about seven months, and on its completion certain facts emerged and certain preliminary recommendations were made. Facts revealed were:

1. That hitherto there had been no classification of patients.
2. That, in consequence, all wards contained so many different types of patients that the accommodation and equipment could not possibly be best for each, nor could any one staff cater really well for all.
3. That none of the modern ancillary services for patients were in use in the wards, nor had it been considered necessary that there should be such services. Indeed, physiotherapists and occupational therapists thought it unprofitable to work on such wards, and a fully trained nursing staff felt it a bore and somewhat beneath them to work with the chronic elderly sick.
4. That wards were large, overcrowded, dull and inadequately lighted.
5. That ward equipment was neither modern nor adequate.
6. That beds were all low, black and of an old-fashioned type and, therefore, difficult from a nursing point of view.

DEVELOPMENT OF A GERIATRIC UNIT

Preliminary plans for reorganization were drawn up and substantial changes were made in March 1936. Classification was started as follows:

1. Wards for investigation and treatment of geriatric patients, including new admissions and those transferred from other departments in the hospital.
2. A ward provided with a majority of cot beds for patients needing some restraint for physical or psychological reasons, but not bad enough to be segregated in the mental observation ward.
3. Ward for female patients whose main or only disability is incontinence of urine and/or faeces.
4. Ward for patients getting up and about and awaiting vacancies in Residential Homes or with friends.
5. Ward for patients no longer needing active medical treatment or rehabilitation, but still requiring a good deal of nursing and some medical supervision.

(These patients need not necessarily be kept in wards of the hospital but could be nursed in a Long Stay Annexe if such accommodation were available outside the hospital, *but* they *should remain the medical responsibility of the Geriatric Unit.*)

Although no major reconstruction was sanctioned, certain improvements and structural alterations of a minor character were undertaken between 1936-1938. These included removal of frame work obstructions interfering with free movement between one part of a ward and another, such as, the replacement of narrow doors by swing doors and a considerable improvement in lighting by installation of individual indirect lighting. The wards were repainted cream in place of the dark colours previously used and the low, black, old-fashioned beds were replaced by high nursing beds, easy-moving, with adjustable back rests and in light pastel shades. In the ward for up patients, low beds were used of a similar modern pattern, and in light colours. The total number of beds was reduced to conform to the standard spacing and each was furnished with a single modern locker, a bed table and a pair of ear phones conveniently hung at the head of the bed.

The wards were equipped with modern clinical aids, similar to those used in the acute wards, and gradually they fell into line with the general wards of the hospital. Additional equipment was added to these wards suitable to their special kinds of patient, for example, hand rails were fixed in parts of the ward devoid of beds so that patients could maintain independence in walking, even in the early stages. Additional arm chairs of varying types were obtained, as more of this type of furniture is needed when larger numbers of long-stay patients are under treatment. For the cot bed ward and the ward for incontinent patients larger stocks of bed linen were supplied.

Following this preliminary classification and segregation, with improved and additional equipment and in a new spirit for this type of patient, the unit set to work to deal with its large numbers of inherited patients, many of whom were bedridden without adequate medical cause, and to tackle its new admissions with an air of hopefulness. Under these new conditions the embryo of the Geriatric Unit was born.

GROWTH OF THE GERIATRIC UNIT

The early years were devoted to pioneer work in internal organization and administration, to improvement in staffing, to details of equipment and to the building up of teamwork, especially amongst nursing and ancillary staff, including physiotherapists and occupational therapists. Many improvements and changes have been made, and today, though far from perfect, an experimental centre is well-established.

In 1942, when the turn-over on these wards had increased considerably, it was found possible to gradually allocate about 90 beds for the Tuberculosis Service, and so the Geriatric Unit was reduced to approximately 200 beds.

New admissions to the Geriatric Unit are never made directly into the ward for incontinent patients, or into the ward for up patients, as it is thought that all patients admitted to these wards should be assessed first. On the male side, the numbers being much smaller (about 1:3) than on the female side, it has not been possible so far to arrange for the same degree of segregation. Incontinence amongst men is never such a serious problem, and a well-trained staff can deal with the majority of incontinent patients by simple nursing methods. At present men needing cot beds have to go to the observation ward attached to the mental block.

Progress at first was necessarily slow, the patients were difficult to re-educate, some were hopeless, and in the early days there was no really good teamwork. One ward which was entirely satisfactory from the start was the ward of 45 female patients set aside for incontinents. In this ward, first-class nursing has been done and a good deal of re-education satisfactorily completed. Many elderly patients have been "cured" of their incontinence and have been able to return home or enter a residential home on leaving this ward. It has never been regarded as a permanent home for patients admitted, although, of course, the turnover must inevitably be very slow, and a certain number of patients must finally be regarded as incurable.

In a different way, the cot bed ward has also done very good work, and the staff on this ward has also treated in an atmosphere of hopefulness and with the right psychological approach. The results have been very promising, considering the type of patient.

In the beginning, the Geriatric Unit was regarded by most of the medical staff as a convenient unit to which to transfer all their unwanted patients, medical and surgical, old or young and usually without consultation. This old tradition has died slowly, but recently there has been evidence that this custom is disappearing and now patients are usually referred in consultation first as to suitability. Also, it is more generally accepted that young chronic patients should not in principle be sent to geriatric wards.

The onset of the war temporarily relieved the hospital of numbers of infirm patients when relatives took their folk with them to be together in the greater danger which lay ahead. With air raids, however, new problems arose and numbers of elderly persons were rendered homeless, and sometimes in one night lost all the younger members of the family. Others were themselves the victims of air raids and suffered physical and psychological trauma. Such cases clearly needed full medical treatment and custodial care in whatever seemed the best accommodation.

The majority of the patients admitted were suffering from:

1. General debility including malnutrition, anaemia, etc.
2. Psychiatric conditions, including senile dementia.
3. Cardio-vascular degenerations, including cerebral arterio sclerosis, cerebral thrombosis, etc.

4. Arthritis—usually of the degenerative type.
5. Progressive nervous diseases.
6. Chest diseases.
7. Neoplasms.
8. Injuries—often referred from the orthopaedic department for rehabilitation.

Patients were unselected except on age (those over 60 years being preferred) and a number were primarily treated in the acute wards. When it became apparent that the prognosis was hopeless they were transferred to the Geriatric Unit, while others of advanced years who were expected from the outset to do well were admitted to the wards for acute patients.

For the aforementioned reasons, and because of the war and difficult housing conditions, the over-all picture could not be considered as quite normal. The results on statistical grounds are obviously less good than would have been obtained had the Unit admitted all new geriatric patients to its wards and if it had refused all geriatric patients who were transferred owing to poor prognosis.

In spite of all these abnormal conditions, however, in 1944 two wards in the unit, one male and one female, started keeping full records of all patients admitted or transferred to its wards, and some interesting figures have emerged. These figures are now published from this young and experimental unit for academic interest, as the writer knows of no previously published comparable figures from a Geriatric Unit of a general hospital, and hopes that other similar units may be encouraged to publish their figures for comparison.

TABLE 4. MALE WARD—CONTAINING 35 BEDS

Year	Admitted	Discharged Home	Discharged Resident Home	Died	Percentage Total Discharges	Percentage Deaths
1944	297	90	23	123	38	41.4
1945	292	86	25	139	38	47.6
1946	191	48	17	78	34	40

TABLE 5. FEMALE WARD—CONTAINING 45 COT BEDS

Year	Admitted	Discharged Home	Discharged Resident Home	Died	Percentage Total Discharges	Percentage Deaths
1944	155	35	15	65	32	43
1945	207	49	30	93	38	45
1946	222	41	27	91	30	41

These figures suggest that of all new admissions probably only about 25 per cent will form a residuum.

THE GERIATRIC UNIT TODAY

The department today carries almost 200 beds and accepts new patients admitted to the hospital (in the age group 60 years plus) and also patients referred to it from medical or surgical staff. These transfers are mainly patients from the medical side who are considered likely to need a very long stay in hospital or who are unlikely to improve much. Those transferred

from the surgical or orthopaedic departments fall into two categories: (a) those whose rehabilitation will require a very long period in hospital; (b) those whose primary condition, e.g., fracture, etc., is complicated by another disease.

The Unit does not accommodate *all* patients over 60 or even over 65, as a number of senile dements are admitted directly to the psychiatric wards attached to the mental observation wards and all surgical emergencies and some medical cases are admitted directly to the general medical and surgical wards.

Recently there has been a greater tendency for medical staffs from general wards to acknowledge that these so-called "chronic" elderly patients will probably do better in the atmosphere of the Geriatric Unit, and in the hands of those staffs who are most interested in such conditions. Such recognition of the value of this department is of course very encouraging.

There have been requests recently for the Unit to conduct Out-Patient sessions, which are being arranged for and will undoubtedly develop in the future as patients themselves learn of their existence. Already old patients are writing in and asking to be seen in the Geriatric Unit.

PHYSICAL MEDICINE

The great need for physiotherapy in these wards is fully recognised and this work is developing slowly but surely. Better results are being obtained as more staffs become available, and in addition to the services of the trained physiotherapists, some of the assistant nurses are doing excellent work under medical direction and supervision. Patients are, therefore, having combined treatment as individuals in the wards and also in small classes in the gymnasium. The gymnasium is a part of a vacated ward and has been very simply equipped for this sort of rehabilitation.

All the wards of the unit are now visited frequently and regularly by the occupational therapists who are beginning to take great interest in the results of their labours and are naturally greatly encouraged when they witness the increase in morale and the physical improvement of their patients. All the usual useful handicrafts are presented and a remarkably high standard of work is being done.

SOCIAL MEDICINE

All wards in the unit enjoy the services and invaluable help of the medico-social workers who work in very close co-operation with medical staff, often doing combined rounds with the medical officer and the ward sister.

FUTURE OF THE GERIATRIC UNIT

As the department gains experience, confidence and more skill, it should be able to prevent a great number of the conditions which are so prevalent and so crippling amongst elderly persons today. It should also be in a position to undertake still more treatment for both in-patients and out-patients

with a quicker turn-over, due to better teamwork and improved technique. It is essential that it should develop its teaching side both for medical and nursing students and post graduates, so that the future generations will be much better equipped by experienced personnel. The department will surely develop research as soon as its foundations are well-laid, for without this stimulus, progress must inevitably remain slow. Eventually, it should become the recognised department for advice concerning old age and conditions mainly dependent upon senescence. It should, in time, overcome the opposition from the more conservative sections of the medical and nursing professions, proving itself to be an invaluable and practical department in the hospital, enjoying the prestige and dignity which it has earned.

Medicine has responsibilities towards the elderly sick and infirm, equal to any other section of the community and must undertake these if it is to remain worthy of its high traditions.

CONNECTICUT INITIATES PROGRAM FOR CARE OF THE AGED

Dr. A. Nowell Creadick of New Haven has been appointed medical director of Connecticut's new program for care and treatment of the chronically ill, aged, and infirm.

Recently announced by Governor James L. McConaughy, appointment to the new post carries with it responsibility for the medical direction of the first statewide program in the relatively new specialty of geriatrics.

The program for state operated facilities for the treatment of the chronically ill and aged was first proposed in a report to the General Assembly in 1943 by the Commission on the Treatment and Care of People Afflicted with Physical or Mental Disabilities, headed by Dr. Creighton Barker. This proposal was supported and further implemented in a report to the 1945 General Assembly prepared by the Research Division of the Public Welfare Council, under the direction of Dr. Karl F. Heiser.

Legislation seeking the establishment of an operating program to meet the needs brought to light in these reports and through studies conducted by the Commission on the Care and Treatment of the Chronically Ill, Aged, and Infirm, was introduced in the last session of the General Assembly and was passed almost in its entirety. This action resulted in the allocation of $900,000 to initiate the program which is now being undertaken.

The commission estimates that of the 250,000 people in Connecticut who are more than sixty years of age, 51,000 are handicapped by chronic diseases and 15,000 of these are at present receiving some form of welfare subsidy, either town relief, old-age assistance benefits, or aid through voluntary agencies.

GERIATRICS

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THE SOIL AND HEALTH*

Lower animals outlive their growing periods about five or six times. By the same rule, the human span should approach 125 to 150 years. We are unavoidably growing old, but we are also definitely optimistic about the possibilities of living the good life in old age.

Young or old, the absolutely indispensable factor for survival is nourishment. The type of soil upon which plants or animals are raised has a direct relation to the nutritive quality of the yield. Protein synthesis is possible only from rich soil. Protein quality deteriorates rapidly as the fertility of the soil dwindles. Thus, what man does to the soil is basically related to the problems of health and medicine. Our greatest mass problems of undernutrition and social maladjustment rise from our marginal and submarginal lands.

We know that degenerative diseases are on the increase. Food produced from depleted, incomplete or rundown soils makes people susceptible to cir-

*At the Athens, Ohio, Conference of the Friends of the Land on "Soil and Life," the editor of *Geriatrics*, A. E. Hedback, M.D., reviewed the social aspects of longevity. Said the Chairman of the conference, Jonathan Forman, M.D., "No physician in America can give us a clearer picture of this problem." The Staff of *Geriatrics* is proud, indeed, to present excerpts from Dr. Hedback's address, "The Aging of Man."

culatory diseases. Many nervous and mental disorders can be traced to poor nutrition. It may be no chance that the prevalence of multiple sclerosis was first noticed in Europe and England at the time when soil depletion was becoming a major problem. The disease, more crippling and more prevalent than poliomyelitis, is not known in China, Japan, or India where soil fertility is maintained by natural fertilizers and manure. It has become a tragic reality in the United States.

In Florida, a nutritional anemia of the hyperchromic type became prevalent among rural school children. Investigation revealed that all the affected children came from five counties with deficient soil. On the other hand, outstanding instances of good health have been linked with particularly fertile soils. Colonel Rowntree, chief of the medical division of Selective Service reported that draft examiners in World War II found that the highest level of health in the United States was in Colorado. He noted a "health belt" centering about that state, an area in which the soils were notably rich in calcium. The lowest level of health was found in a southern state where the depleted soil is notoriously lacking in calcium.

Neurological conditions due to deficient diet have been established beyond a doubt. Vitamin B deficiency favors polyneuritis. Night-blindness is caused by lack of Vitamin A. Pellagra, the multiple cerebral hemorrhages of scurvy, and the spasms and convulsions of tetany all have a basis of malnutrition.

Scientists are asking "Does civilization demand more compromise than we can biologically stand if we are nourished on second-class food?" If we cannot combine the benefits of scientific discovery with the advantages that accrue from a strenuous life, we must choose between dull senility and a shorter but more interesting existence. We should be able to combine these benefits, however, if we lay more stress on building *stamina.*

A.E.H.

GETTING READY FOR A HAPPY OLD AGE

Good health is a positive thing, declares Jonathan Forman, M.D., Editor of the Ohio State Medical Journal. It prevents disease and degenerations. Optimum health depends upon optimum nutrition. The job of getting ready for a happy old age should begin just as soon as you are old enough to be discharged by your child specialist. Geriatrics begins where pediatrics leaves off. You and I, our children, and even our grandchildren are going to be dead a long time before the scientists can get all the gaps in our knowledge of soil-health relationships filled in. But as long as nothing we do is out of line with Nature and is in line with all the knowledge which investigative scientists have assembled, we must be on the right track to add years to our lives and strength and health to our minds and bodies.

From *Physician Heal Thyself.* The Land 6:381-382, (Autumn) 1947.

Digests FROM CURRENT LITERATURE

Blood Changes in the Aged.

OSCAR OLBRICH, *Edinburgh Medical Journal,* 54, No. 6:306-321 (June), 1947.

Changes in the composition of blood might well be expected to accompany the many progressive degenerative processes in old age. In the pertinent literature, some of the reported figures are so far removed from the "normal" that one is inclined to believe that they refer to patients suffering from a variety of pathological conditions.

Red-cell counts for men over 60 showed an average of 5,075,000 and for women 4,761,000. Between the ages of 60 and 88, males show no tendency to a fall in the number of red cells; females show a slight fall with increasing age, so that at the age of 80 the blood count reveals 4.68 millions. According to Osgood and Wintrobe, men show in old age a fall in the number of red cells, whereas no such fall is evident in women; however, wartime conditions may have influenced the measurements above referred to. In actual fact, males may show no diminution in red cells in old age, while females might be expected to show an increase, since at 60 the strain on the iron-metabolism due to menstruation and child-bearing has been removed.

Findings of the Medical Research Council's Committee on hemoglobin surveys reveal a mean figure of 102.2 per cent for men below the age of 60, and for women 93.7 per cent; for men over 60 it was 98.7 per cent, in women up to 80 and over 92.4 per cent. The hemoglobin level in men tends to fall with advancing age, whereas in women it tends to rise after the cessation of menstruation. The standard "100 per cent" used in the report of the above Committee corresponds to 13.8 gm. of hemoglobin per 100 ml. of blood.

With regard to hematocrit, Newman and Gitlov give an average for aged males of 41.2, with a range of 40.3-45.5, and for females 36.7, with a range of 32-40. Apparently there is an increase in males in the sixth and seventh decade which was not found in females.

Concerning the average corpuscular volume, both men and women show a slight tendency for it to increase with advancing age. The mean volume was found to be 88.9 c.u. $\pm$ 0.70. Slight increase in old age may be associated with the increased lactic acid content of the blood. Regarding the red cell diameter, factors known to affect it are dehydration, pH, and temperature. The range of variation is slightly greater in females than in males but it has been proved that the mean corpuscular diameter is significantly greater in the aged, due to an increased quantity of CO_2 in the blood, carbonic acid tending to swell red cells. In the aged there may be a reduced rate of new cell formation, and a correspondingly reduced rate of cell destruction, so that the blood of the aged would contain relatively few young cells.

The total white blood cell count reveals an average of 7,020 $\pm$ 200 in males between 61 and 88 years of age, in females 7,058 $\pm$ 243. With respect to the Differential count, it may be stated, that polylobation is correlated with the aging of the cell. All investigators agree, that the granules of the cytoplasm are an expression of protoplasmic activity; their decrease is a sign of decreased vitality. In aging persons an increased number of white cells circulate in the blood, the vitality of which is decreased.

Basophil and eosophil leucocytes have the same average values in the old as in the young without any morphological change. This is also true of monocytes.

9 tables, 2 figures.

Surgery on Elderly Patients.

W. W. BAXLEY, *J. of the Medical Association of Georgia*, 36, No. 3:116-119 (March), 1947.

In preparing elderly patients for an operation, general physical conditions should be studied regarding anemia, dehydration and electrolytic imbalances, to be corrected with blood and intravenous fluids containing electrolytes. Sulfonamides or penicillin should be administered to combat any present or anticipated infection. Operations on the large bowel should be preceded for several days by large doses of sulfasuxidine. In gastrointestinal obstructive lesions, Wangensteen suction should be employed. Vitamin K should be given to patients whose prothrombin and clotting time are delayed.

A local anesthetic should be used singly or in combination with some type of inhalation anesthetic. Ether alone or with gas is well tolerated unless a respiratory infection or diabetes are present. Some of the operations are best done in two stages, for instance, large bowel resections. The question arises at times whether an ulcer around the pylorus with obstruction should have a resection or gastroenterostomy. In the absence of hemorrhage and low acidity, the latter works very well. In the presence of hemorrhage, resection with removal of the lesion is highly indicated. In an acutely inflamed gallbladder it is often safer to do cholecystostomy with removal of any stones. In gangrene of the lower extremity, amputation through the knee joint makes a satisfactory type of operation; it is easily done and far less shocking than amputations at a higher level.

Good postoperative treatment may mean the difference between success and failure. It may become necessary to give blood, plasma, or fluids while the patient is on the operating table, otherwise it may be postponed until the patient is back in bed. If blood or plasma are not indicated, intravenous fluids should be given for the first 24 hours in the amount of at least 3,000 cc. Afterwards fluids may be given by mouth. If not adequate, they should be supplemented with parenteral fluids. A warning here may be in order regarding the use of salt solution. Marked increase in sodium chloride linked with a hypoproteinemia may produce disastrous effects. Edema, particularly of the lungs, will place added strain on already overtaxed cardiovascular and renal systems. Since the pre-operative diet in elderly patients most likely has been low in proteins, it is advantageous to give parenteral aminoacids. Oxygen is essential if there are signs of cardiac failure or pulmonary distress or if there is any degree of shock. The brain cells suffer tremendously from cerebral anoxia.

Deep breathing and early active movements should be insisted upon. Chest complications or phlebitis of the extremities can be obviated to a marked degree by having the patients out of bed early. Thrombophlebitis or phlebothrombosis rarely develop before the fourth or fifth days. In the event of development of either of these, paravertebral block used singly or in combination with dicumoral should be carried out. Heparin is beneficial but requires constant laboratory check on the clotting time.

Description of 10 cases of patients aged 62 to 78.

Senile Cataract: Statistics on 100 Cases.

ENRIQUE CIPRIANI, *J. of the International College of Surgeons*, 10, No. 3:352-358 (May-June), 1947.

The occurrence of cataract in the aged is without any doubt the disease presenting the most technical difficulties. In its treatment the author follows the Castroviejo method with certain modifications. Statistics on 100 cases of senile cataract operated on by the author reveal excellent results.

The operation requires very careful

preparation in the line of antisepsis, such as saponifying the eyebrows, the entire area of the eyeball and especially the eyelashes, as well as previous disinfection with argyrol at 40 per cent, repeated just before the operation, when it is associated with atropine at 2 per cent, every half-hour for 2 hours. Preparatory anesthesia is made by instillations of 5 per cent cocaine every 3 minutes during the last half-hour before the surgical intervention. After saponification of the skin, iodized alcohol is used in order to insure even more complete asepsis of the skin. The final anesthesia is done by injection of 2 per cent cocaine with 1 cc. adrenalin. The eyelids are anesthetized according to the Van Lint method, producing perfect results. It consists of 5 cc. solution of novocaine at 4 per cent. This is also used for retrobulbar injection as anesthetic for the ciliary ganglion.

The author uses the Lancaster blepharostat rather than the separator recommended by Castroviejo, since lid clamps loosen easily. The section of the conjunctival flap follows (employing delicate dentate forceps for grasping the upper half of the eyeball) up to the conjunctivo-corneal border, 2½ mm. externally from the limbus corneae, by means of conjunctival scissors. In this manner, protection of the wound is guaranteed in the postoperative treatment. The flap is cut up to the conjunctivo-corneal border, and at this time, since the eyeball is not yet opened and, consequently, one may still employ external force without danger to the internal eye, the author makes two temporary stitches of suture which are of conjunctivo-scleral character with atraumatic silk 8 zero, which afterwards will represent the basic points of the suture and will finally be of conjunctivo-sclero-conjunctival nature, allowing perfect adaptation of the lips of the wound. With these stitches made, before entering into the eyeball, with the conjunctival flap over the cornea and with the fixation forceps in place, the eyeball is immobilized at the inferior meridian and in the sclero-corneal limbus and with Berens' keratotome one enters the anterior chamber exactly into the sclero-corneal limbus. Thereupon the incision is made by means of Castroviejo's scissors, closely observing whether the removal of the crystalline lens is possible through the incision without the flap forming an obstacle. This method offers the security of perfect corneo-scleral incision. Another advantage of author's technique is, that he does not have to change his position during the intervention.

The peripheral iridectomy is performed by angular forceps and Barranquer's erisiphake. In case of hemorrhage, physiological solution of serum is applied.

The extraction is done with Arruga's forceps, modified by Gill. The capsule is held and with a hook, as used for strabismus, it is seized; the crystalline lens is dislocated from its inferior insertion, and then with extremely careful rotating movements and slight traction, while pressing the hook to the eyeball, the extraction is performed.

After the termination, several drops of atropine are instilled, metaphen is injected, and, finally, penicillin paste is applied. Both eyes are bandaged for 48 hours or less, after which only one bandage on the treated eye is worn.

Statistic. Bibliography of 11 references.

Pyloric Obstruction Due to Stenosing Ulcer in the Aged.

SEBASTIAN J. CARNAZZO, *J. of the International College of Surgeons,* 10, No. 3:304-307 and 317 (May-June), 1947.

With increasing peptic ulcers becoming a surgical problem, surgeons are occasionally confronted with pa-

tients of advanced years suffering from stenosing duodenal ulcer due to cicatricial contraction. It has been found that obstruction in the region of the pylorus caused by stenosing ulcer in individuals past 55 years of age are an exacerbation of long-standing, chronic ulcer disease, which damaged and caused contraction of the first part of the duodenum and the pylorus. Abdominal pain is the chief complaint, and it originates in the epigastrium. Abdominal distension was noted in certain cases, but tenderness is localized in the epigastrium of all such patients. Nausea and vomiting are also present in all. Gastric analysis invariably reveals low acidity in these cases.

At operation, a grossly enlarged and thickened stomach with marked gastritis was found in all cases treated by the author. The completely stenosed pyloric end of the stomach and first duodenal portion were markedly contracted and adherent to the head of the pancreas and surrounding tissues. The shortened duodenum was drawn into the liver sulcus.

Preoperatively, ice bags were placed on the upper abdomen, and every 12 hours, 1,000 cc. of a 10 per cent dextrose solution in sterile distilled water was administered intravenously. Vitamin K, large doses of ascorbic acid and vitamin B complex were given intramuscularly once daily. These procedures are continued for up to a week in order to relieve the edema of the gastric walls and insure safer suturing. In the operation the author felt it necessary to do no more than to correct the mechanical obstruction, either by a short circuiting intervention or by pyloroplasty. Posterior gastroenterostomy has proved to be the simpler and safer procedure for this mechanical obstruction, with good immediate results. However, some patients returned with symptoms of hyperacidity, peptic ulcer, hemorrhage, or perforation. Therefore, before planning surgery for mechanical obstruction of the duodenum due to ulcer, more radical procedure should be considered. Subtotal gastric resection is the operation of choice and has been carried out in most cases with very low mortality.

Concerning the technique, incision through the peritoneal fold covering the common duct is made for exposure to permit the recognition of the relation of the common duct and Vater's ampulla to the ulcer. Then it can be readily seen whether the ulcer can be removed and sufficient duodenum be left for safe closure.

Diseases of the Veins in Older Patients.

EDWARD A. EDWARDS, M.D. *Bulletin of the New England Medical Center 9,* No. 3 (June), 1947.

Patients suffering from *varicose veins* present themselves most often during the periods of middle and old age, frequently after they have been affected by serious systemic disease. There are special reasons why the older patient should have his varices corrected:

(1) The circulatory effects of varicose veins constitute a cardiac burden. Large varices may cause an increase in blood volume of as much as 600 cc. Moreover, the assumption of upright posture allows accumulation of blood in the varices, thereby decreasing the venous return to the heart. The undesirable effects are reversible by treatment of the varices.

(2) With advancing age, the incidence of edema, fibrosis and ulceration of thrombosis increases. Locally, venous engorgement may become an aggravating factor for hypertrophic arthritis of the knees or arterial insufficiency of the legs.

(3) The presence of varices gives a threat of thrombophlebitis, especially in the aged, where there is a chance for propagation with resultant pulmonary

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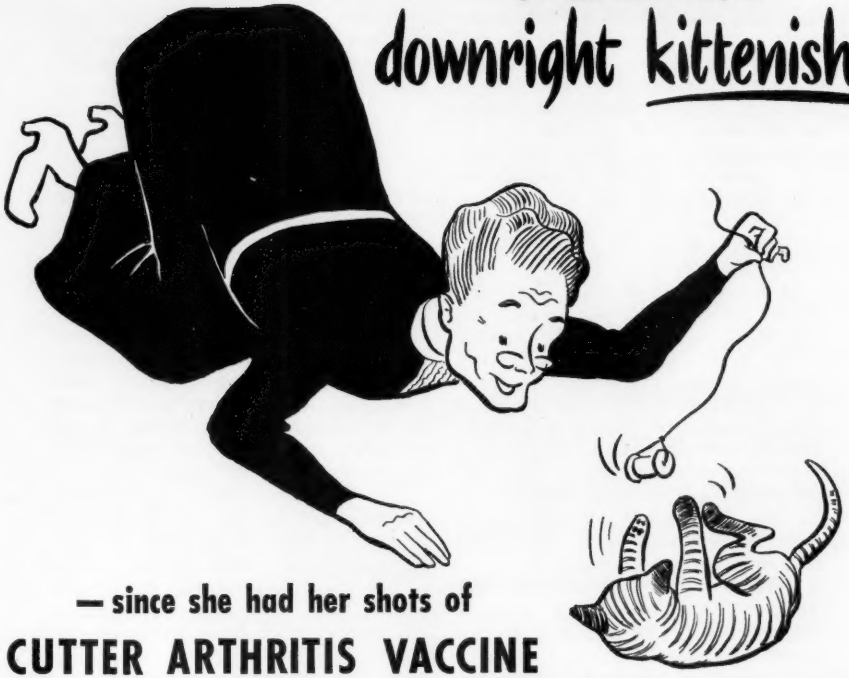

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We can't say, exactly, how this vaccine alleviates arthritic pain. Or why it slows down the progress of the disease. But the fact remains — *it does!*

*Crowe, H. Warren, *Handbook of the Vaccine Treatment of Chronic Rheumatic Diseases*, Oxford University Press, 2nd edition, 1932, covering treatment with similar vaccines.

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embolism, especially in bedridden patients.

The older patient tolerates well a division of the saphenous vein done at the groin, being preferable to sclerosing injections which, however, may be used postoperatively. Neither injections nor operative procedures should be done distal to mid calf. In the latter division of communicating veins and "stripping" should be done only exceptionally after fifty.

In the elderly patient, blood dyscrasia (especially polycythemia) and visceral malignancy must be thought of as possible etiologic factors. Visceral malignancy may cause thrombophlebitis of veins in direct contact with a primary tumor or secondary deposits. The invasion is usually via the lymphatics or vasa vasorum of the vein, and thrombosis frequently follows. For the body as a whole, the significance of venous penetration is its importance as a mechanism for metastasis.

Infiltration of the lymphatics either precedes venous invasion or occurs at the same time. The edema of the involved limb may be purely lymphatic, or of combined lymphatic and venous, origin. The keynote of management is to search for the etiologic lesion, to treat the limb with a supportive bandage or stocking, and to perform paravertebral block, in case of pain or cyanosis.

Migratory thrombophlebitis in superficial and deep veins distant from the tumor, due apparently to "thrombophilia," is apt to arise in instances of carcinoma of the pancreas, stomach, or lung.

If thrombophlebitis has become established, fatal pulmonary embolism may result in elderly patients. In the latter, dying of carcinoma, tuberculosis, or heart disease, multiple thromboses of major veins, called "marantic" or terminal thromboses, are found sometimes. These thrombi may exist a variable number of days before death, and are hard to detect. When recognized, the patient's condition may be reversible; in which case the thrombosis deserves treatment along the lines followed in postoperative thrombophlebitis.

Personality Structure in the Older Age Groups.

MIGUEL PRADOS AND EDRITA G. FRIED, *J. of Clinical Psychology*, 3, No. 2: 113-120, 1947.

Past observations on the older age groups have been concerned predominantly with borderline phenomena, that is, with problems of senility; relatively little attention has been focused on the mental changes effected during the aging process in older individuals regarded as "normal" types.

The authors made personality studies on a sample of 35 people, ranging from 50 to 80 years of age. The studies have been carried out by means of the projective Rorschach technique. The evolution of changes in personality structure was studied by subdividing the sample into three equal age groups ranging from 50 to 60, from 61 to 70, and from 71 to 80 years.

Characteristic features of the emotional and intellectual aspects of the personality in the older age groups are described and interpreted and it is shown that an impoverishment of creative intellectual faculties takes place with increasing age. However, the authors' records indicate that there is no single crucial age period during which a general adaptation to the process of aging is likely to occur in the personality structure. Rather, different adaptations are being observed at different age levels, as evidenced by the fact that sometimes one group tested behaved very much like the individuals in one of the other groups.

The anxiety with which normal elderly individuals, aged fifty to seventy, react to the awareness of inadequacy to meet the requirements seems to be of a more intellectual, more superficial

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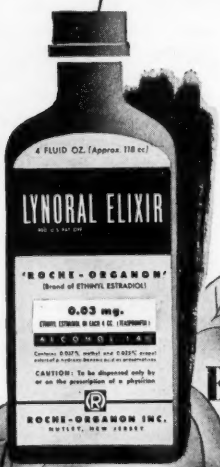

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nature than the anxiety observed in neurotic subjects. It expresses mostly a fear of being incapable to fulfil the demands imposed on the individual. Although there are some signs that responses to reality are not quite adequate, there is no striking evidence of any high degree of neuroticism.

The authors do not find the picture of individuals unable to reconcile their instinctual strivings with the code enforced by the environment, but rather the picture of optimal psychic functioning being somewhat distorted because the capacity for affective responsiveness to stimulation has been reduced. Simultaneously, whatever emotional life takes place tends to be mostly of a somewhat primitive, infantile character, so that it may be taken for granted that the affective life becomes comparatively shallow in the aged. Frequently, subjects over seventy seem to be resigned to their condition, little inner conflict taking place.

Therefore, in many cases, the individual's control over demands of his instinct tends to disappear with increasing age, so that some of the primitive manifestations of childhood reoccur, as is revealed through the marked preponderance of animal movement responses over human movement responses.

Bibliography of 15 references, 1 table.

Medical Evaluation of the Surgical Treatment of Hypertension.
ROBERT STERLING PALMER, *J. A. M. A.*, 134, No. 1:9-14 (May 3), 1947.

A major effect of dorsolumbar sympathectomy in essential hypertension results from the relative postural hypotension, pooling of the blood in dependent parts, and presumed decrease in venous return. The duration of this effect varies widely and accounts for the major part of the favorable effect on the disease and the considerable disability associated with the operation.

Compensatory vasomotor effects are orthostatic tachycardia and breathlessness, faintness, coldness of the hands, sometimes with the appearance of Raynaud's phenomenon, and infrequently, serious exacerbation of preexisting Raynaud's disease, so that additional operative intervention is required. The latter is interpreted as compensatory vasoconstriction which seemingly does not involve the cerebral circulation as judged by relief of headache and improvement in eye grounds. The orthostatic compensatory vasomotor effects are reduced and progressively minimized by elastic bandages on the legs and by an elastic abdominal binder.

When the favorable effect of operative intervention is critically evaluated, it is found that there has been a diminishing return of favorable results,

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the longer the patients are followed up, but the favorable effect has been obtained twice as frequently by surgical means than by a careful medical regimen and was obtained in patients with malignant hypertension whose blood pressures had been unaffected by medical management.

Patients with the most pronounced vasospastic elements are likely to receive the greatest benefit, whereas patients with typical late benign hypertension with clinical evidence of irreversible diffuse arteriolar disease in brain, heart, or kidneys, are not benefited conspicuously; often they are plagued by long disability to no purpose.

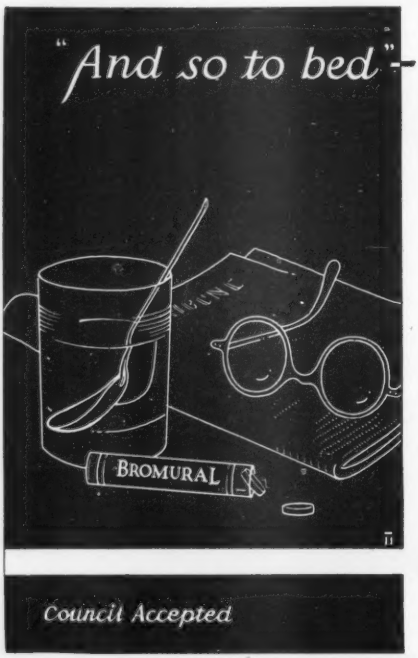
From the author's experience, however, sympathectomy is regarded as the treatment of choice for malignant hypertension and may be offered also to patients with early to moderate vasospastic hypertension who have no clinical evidence of advanced, irreversible diffuse arteriolar disease. To grade the degree of hypertension and estimate the prognosis, interval observations over a period of time are necessary in almost all patients except those with malignant hypertension. Prescription of operation involves evaluation of hypertension and the attendant organic changes, the social and economic status and the personality of the patient and the objective of the treatment (Symptomatic relief, reduction of blood pressure, or halting the progress of the disease).

Bibliography of 7 references.

Hypertension.

M. HERBERT BARKER, *Proceedings of the Institute of Medicine of Chicago*, 16, No. 11:314-316 (Feb. 15), 1947.

Experience indicates that only 5 per cent of hypertensive patients are found



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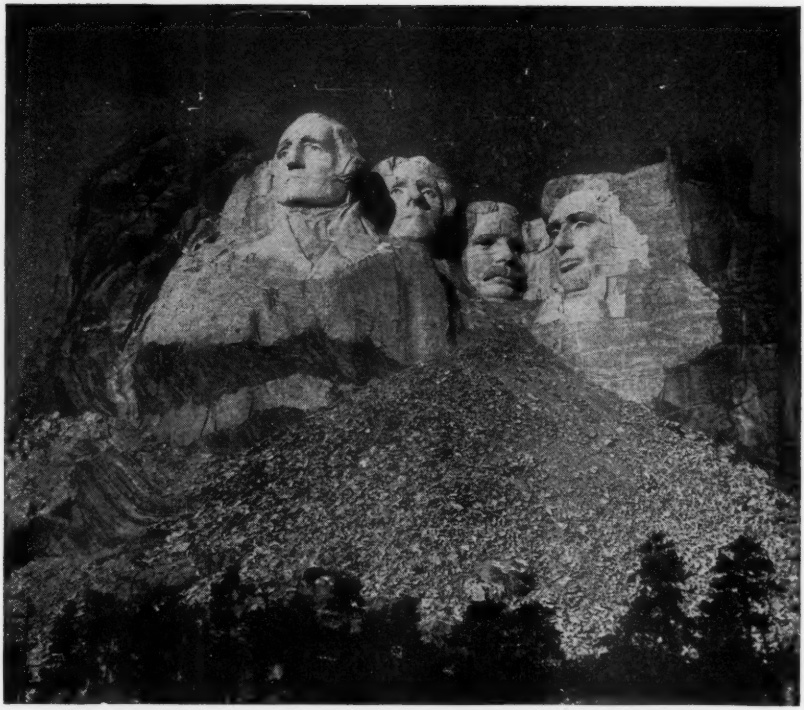

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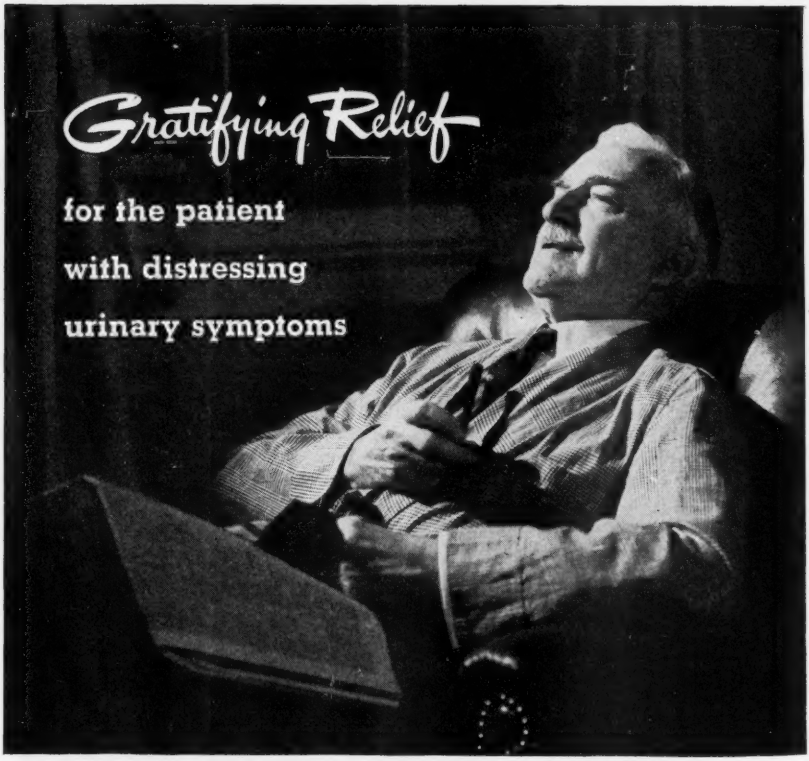
to have tumors, diseases, or anatomic abnormalities subject to correction. This leaves the vast majority of cases without explanation. Fortunately, much can be done to effect measures of comfort, and to maintain the efficiency of the patient.

A person with nitrogen and phosphorus retention usually runs an elevated blood pressure which may be benefited by low phosphorus diet. In the case of a failing heart, digitalization may prove beneficial, particularly in the older age group. Patients with severe menopausal manifestations, including hypertension, may be returned to a satisfactory status with adequate endocrine replacement therapy. Relaxer tests often suggest the value of sedation in the tense, emotional, hyper-reactor type of patient who requires relatively large doses of sedation 4 times daily if much benefit is to be expected from such therapy.

Sympathectomy for hypertension has not been encouraging; in most cases a temporary drop of the blood pressure for from 2 to 4 months is recorded, but it tends to return to the previous level. However, some patients are more free from headaches, nervous tension, or ocular phenomena after extensive sympathectomy. Also, a response to the thiocyanates has been observed to be better after sympathectomy in both man and, experimentally, in the dog. The relief of the symptoms in some 85 per cent of the patients through thiocyanate, and the decrease in the blood pressure in over 50 per cent is certainly noteworthy. Since the relief of the heart strain with return of cardiac compensation may likewise be followed by the reduction of blood pressure, a fair trial of adequate blood level controlled (8 to 12 mg. per 100 cc.) thiocyanate treatment is indicated in plethoric cases. In the author's experience, those most amenable to such medical treatment have a cell pack over 50 per cent and a sedimentation rate under 5. Those showing a low hematocrit and a sedimentation rate of 25 or over may well be entering the malignant phase and thiocyanates are of no value or may even aggravate the patient's general condition.



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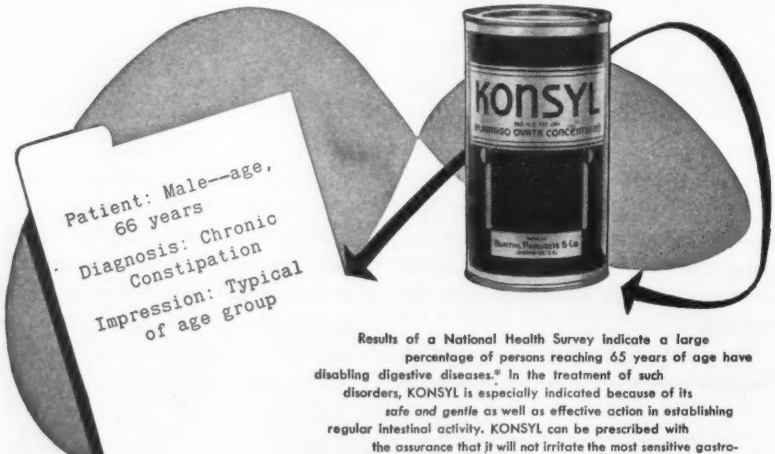
Thiocyanate for Hypertension.

S. G. SIDDLE AND P. J. W. MILLS, *The Lancet*, London, 1, No. 12:465-466 (April 5), 1947.

Dr. Mills claimed that potassium thiocyanate produced striking symptomatic relief in cases of benign hypertension in which headache and dizziness were prominent symptoms. He stated, however, that the drug does not permanently lower the blood pressure, even in cases in which there is much symptomatic relief. Dr. Siddle upholds that these statements are at variance with the results of other workers published in the past ten years who have claimed to produce relief of symptoms in a smaller proportion of cases than Dr. Mills but have often found a reduction of blood-pressure. A typical example is the report of Barker, Lindberg, and Wald (J. A. M. A., 117: 1591, 1941) on a carefully controlled series of 246 hypertensives treated with thiocyanate for from 2 to 11 years. Persistent symptomatic improvement occurred in 56 per cent and reduction of blood-pressure by 30/20 mm. or more was obtained in 67 per cent, according to their tests.

Dr. Mills' failure to lower the blood-pressure sufficiently was probably due to inadequate dosage. He aimed at a blood thiocyanate of 5-8 mg. per 100 ml., whereas previous writers found 8-12 mg. necessary.

In reply, Dr. Mills pointed out that although it had been found that headache was the symptom which was most relieved by thiocyanate, it was also ascertained that other symptoms obtained some benefit in certain cases, for instance, insomnia and mental changes (lack of concentration).



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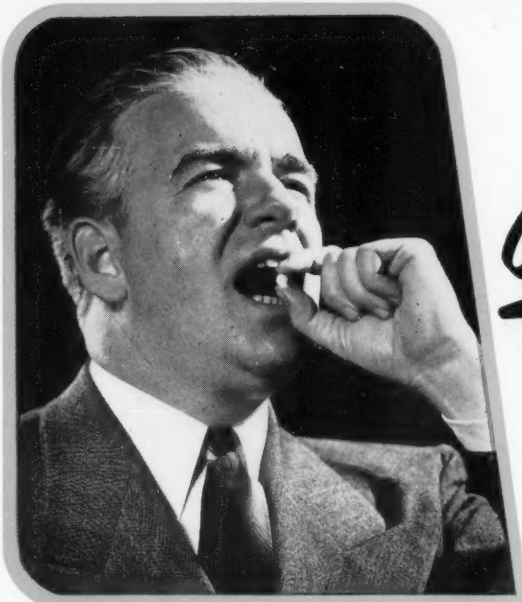

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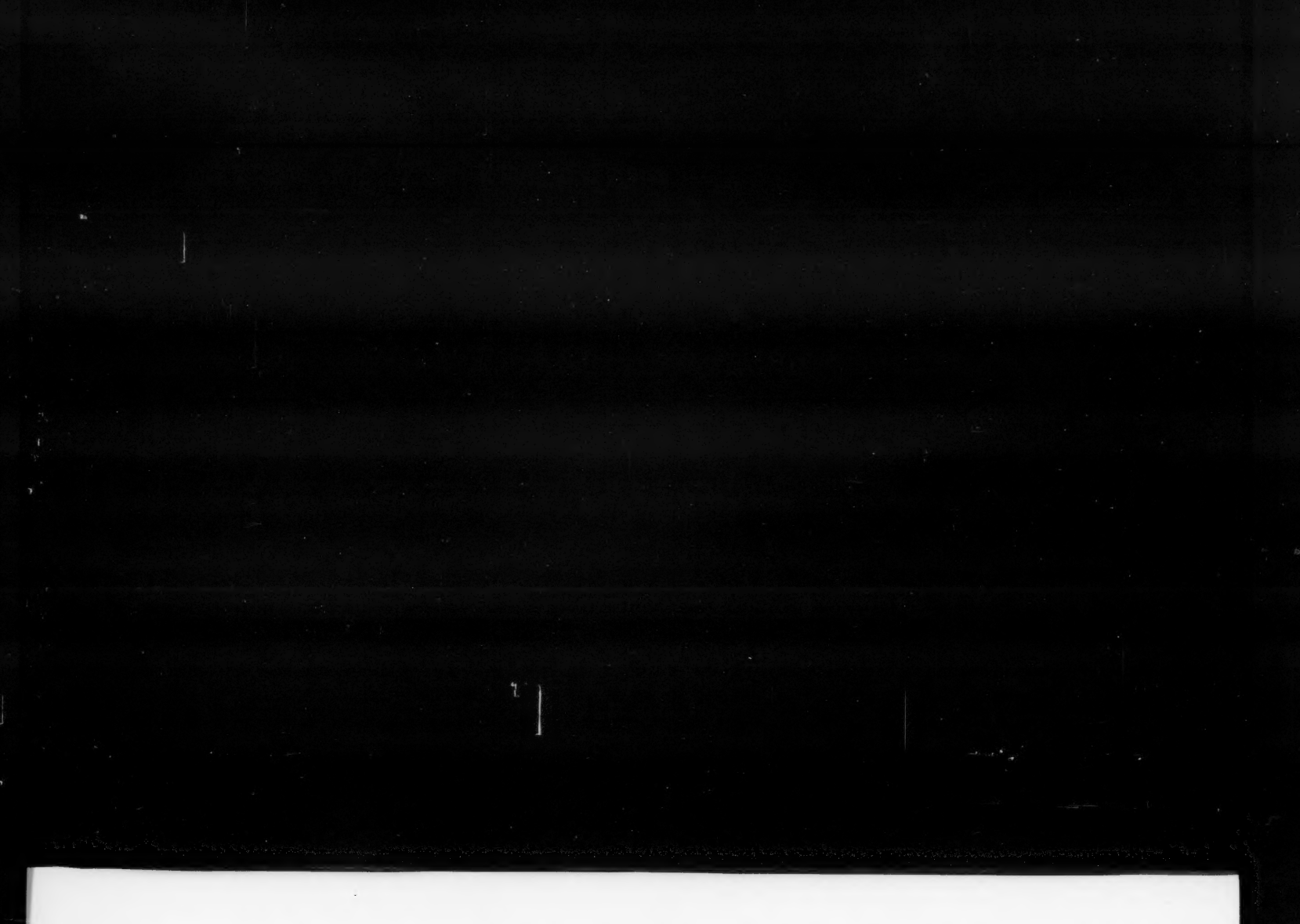
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